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VOL. XVIII.

"Nature never hurries; atom by atom, little by little, she achieves her work."
EMERSON.

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THE

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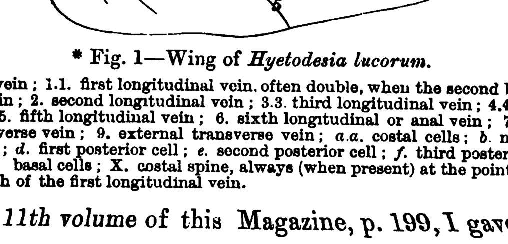
ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ*.

BY R. H. MEADE.

In the following paper I shall attempt to give a list of the British species comprised in the great Sub-Family of *Muscidæ* named *Anthomyiidæ*. This group of flies may be distinguished from the more highly developed or typical *Muscidæ* by the first posterior wing-cell being fully open; the fourth longitudinal vein running direct to the margin of the wing, without being bent upwards towards the third longitudinal vein in a curve or angle as in the *Tachinidæ* and *Muscidæ*. The *Anthomyiidæ* are separated from the various groups of smaller or acalypterate *Muscidæ* by the alulets or scales being more or less highly developed.

For the illustration of the characters of some of the genera, and also of distinctive points in new or obscure species, it will be useful to introduce some figures of the wings, and I shall first insert an explanatory sketch to enable the student to understand the names of the veins and cells to which reference is made. The terms which I have adopted are the same as those used by Loew in his introductory chapter on the terminology of *Diptera*, inserted at the beginning of the first part of his Monographs on the *Diptera* of North America.



* Fig. 1—Wing of *Hyetodesia lucorum*.

A.A. costal vein; 1.1. first longitudinal vein, often double, when the second branch is named the auxilliary vein; 2. second longitudinal vein; 3.3. third longitudinal vein; 4.4.4. fourth longitudinal vein; 5.5. fifth longitudinal vein; 6. sixth longitudinal or anal vein; 7. axillary vein; 8. internal transverse vein; 9. external transverse vein; *a.a.* costal cells; *b.* marginal cell; *c.* submarginal cell; *d.* first posterior cell; *e.* second posterior cell; *f.* third posterior cell; *g.* discoidal cell; *h.h h* basal cells; X. costal spine, always (when present) at the point of termination of the first branch of the first longitudinal vein.

In the 11th volume of this Magazine, p. 199, I gave a sketch of the different genera into which the numerous species of this Sub-Family may be grouped. More extended experience has caused me to somewhat modify my views, and to introduce some new genera; therefore, before enumerating the species contained in each genus, I shall briefly give the characters by which such genus may be distinguished from the others; and at the end of the list of species in each genus, I shall make a few remarks on such species as possess points of interest or obscurity, and lastly describe any new species.

1. POLIETES, Rond.

Macrosoma, R. Desv.
Aricia, pt., Auctt.

Gen. ch. — Eyes hairy, contiguous in males; arista plumose; margins of facial groove ciliated from the vibrissæ to the base of the third joint of the antennæ; alulets large, the lower scale twice as long as the upper; abdomen short and rounded; bristles on the back of thorax and abdomen small and soft; anal vein terminating a short distance from the margin of the wing.

1. LARDARIA, Fab.
2. ALBO-LINEATA, Fall.
    floralis ?, Desv.

2. HYETODESIA.

Yetodesia, Rond.
Aricia, pt., Auctt.

Gen. ch. — Eyes hairy, contiguous or approximate in the males; arista plumose or sub-plumose; facial groove bare, or nearly so; alulets generally large, but variable in size, the lower scale however always longer than the upper; abdomen oval or oblong; anal vein prolonged, but not reaching the margin of the wing.

Sect. 1—*Legs entirely black.*

1. INCANA, Wdm.
2. LUCORUM, Fall.
3. MARMORATA, Zett.
4. SERVA, Meig.
5. DISPAR, Fall.
    nivalis, Zett.
6. DUBIA, *sp. n.*
7. OBSCURATA, Meig.
8. VARIABILIS, Fall.
9. LONGIPES, Zett.
    atra, Fall.
10. UMBRATICA, Meig.
11. SEMICINEREA, Meig.

Sect. 2—*Legs partly pale (fulvous or rufous).*

12. LÆTA, Fall.
13. PERDITA, Meig.
    trimacula ?, Bouché.
14. ERRANS, Meig.
15. SIGNATA, Meig.
19. BASALIS, Zett.
20. RUFIPALPIS, Macq.
21. ABDOMINALIS, Zett.
22. SIMPLEX, Wdm.
    posticata, Meig. & Zett.
23. SCUTELLARIS, Fall.

H. SERVA, Meig.

The specific characters assigned to this species are insufficient to distinguish it from its congeners, especially from *H. lucorum* and *H. marmorata*; it may, however, be easily determined by the following points of difference: in *H. serva* there are only three bristles behind the transverse suture on the thorax, in each of the two parallel longitudinal rows of setæ which are placed between the middle and lateral black stripes; while in *H. lucorum* and *H. marmorata*, as in most of the higher Anthomids, there are four bristles in each row behind the suture. In *H. serva* the external transverse vein of the wings is straighter than in either of the other species, and not clouded with brown. The abdomen in *H. serva* is without the rounded black spots seen in *H. lucorum*, but marbled or tessellated as in *H. marmorata*. The posterior tibiæ of the males in *H. serva* have no long hairs or ciliæ on their inner sides, while in *H. lucorum* they are thinly ciliated with a few long hairs along the upper two-thirds of their inner surfaces, and in *H. marmorata* along their lower two-thirds. *H. serva* is usually rather smaller than either of the other two species. It is much less common than *H. lucorum*.

H. DISPAR, Fall.

There is no doubt but that this is synonymous with *H. nivalis*, Zett. Rondani describes the latter species as having the posterior tibiæ densely ciliated ("*intus sub-barbatis seu dense villosis*"). He does not describe *H. dispar*, and neither Fallen, Meigen, nor Zetterstedt says anything about the armature of the legs in either species; so, following Rondani, I named the first specimens of this fly that I saw *nivalis*; but, upon obtaining typical individuals of *H. dispar* from the continent, I found that they had also the beards on the posterior tibiæ, and were in every way identical with the English specimens named *nivalis*, so Fallen's name must stand. This species is rare: I received one male from Mr. C. W. Dale (Dorset), and found one in a collection of unnamed insects made by the late Mr. F. Walker.

H. VAGANS, Fall.

I have introduced this species into the British list upon the authority of the late Francis Walker; but I have never seen a specimen, either English or continental, that agrees with the description given by authors. Mr. Kowarz, of Franzensbad, sent me two which he had taken from the collection of Professor Loew, in which they were placed and named as *vagans*, but they were exactly similar in all points to *H. basalis* of Zetterstedt, only of rather a larger size. The femora were all entirely pale, and the palpi black, while in the description of *vagans* given by Fallen and Meigen the anterior femora are given as partly black, and Meigen says the palpi are red at the base. I suspect that *H. vagans*, Fall., and *H. basalis*, Zett., are only varieties of the same species, but this can only be determined by the examination of typical specimens in the collections of Fallen and Meigen.

H. SCUTELLARIS, Fall.

This species varies very much in several particulars, and has, on this account, been described under several different names. Sometimes the antennæ are entirely black or grey, at other times the first two joints are rufous. In some specimens the arista is longer-haired than in others. The scutellum is sometimes entirely yellow, but it is often more or less grey at the base. Again, there is often a narrow longitudinal black stripe on the dorsum of the first and second abdominal segments, as well as a black line on the posterior edges of the segments, while in other specimens the abdomen is entirely unmarked. These and some other minor distinctions are by no means constant, and I can find no essential differences of structure; therefore I believe the *H. populi* and *H. variegata* of Meigen are only varieties of *H. scutellaris* of Fallen.

H. DUBIA, *sp. n.*

Oblongo-ovato cinerea; fronte vix prominente; ore non producto; oculi in mare subcontigui; seta breviter plumata; thorace lineis quatuor distinctis nigris; abdomine vitta dorsali maculisque indeterminatis nigro-fuscis; vena transversali interna pone medium cellulæ discoidalis posita. *Long.* 3½ *ad* 4 *lin.*

Head: forehead very slightly prominent; eyes of male long-haired and subcontiguous, separated by a narrow black line, which is bordered by a silvery-white margin; face silvery-white, with black reflexions; epistome slightly projecting; antennæ narrow, third joint about twice the length of second; arista short-haired.

Thorax light ash-grey, with four longitudinal very distinct black stripes nearly equal in width, but varying somewhat in breadth in different specimens; the outer pair interrupted at the suture; scutellum covered with ash-grey tomentum, of which it is sometimes partially denuded so as to leave a black spot at the base or in the centre; four setæ are placed longitudinally on each side behind the suture in the space between the middle and lateral stripes.

Abdomen grey, with a longitudinal black stripe extending on the dorsum over the first two or three segments; sides marked or tessellated with black patches, which assume the form of irregularly shaped spots on the bases of the segments, when viewed in some directions; third segment without setæ on the disc.

Wings slightly tinged with yellow at the bases and along the veins; internal transverse vein placed a little behind the centre of the discoidal cell, and almost exactly opposite the end of the auxilliary vein; external transverse vein slightly oblique and a little sinuous.

Calyptra nearly white. *Halteres* yellow. *Legs* black; posterior tibiæ without any long hairs on their anterior or inner surfaces, and with only a few setæ on their outer sides.

This species is not common. I have three British specimens, one of which I captured near lake Windermere, and another near Wakefield; I also received one from Mr. Kowarz, of Franzensbad, taken in Hungary. I first named it *H. lugubris*, Meig., but, on receiving a typical specimen of that species from the continent, I at once saw that they were quite distinct. It more closely corresponds to the description of *H. consobrina*, Zett., and is perhaps the same, but Zetterstedt's account is so short and incomplete, that his species cannot be identified with certainty without the examination of the specimens in his collection, so I have thought it better to describe it as new.

It may be distinguished from *H. lugubris* of Meigen (*H. morio*, Zett.), of which each segment into a wide triangular mark; by the posterior tibiæ being much more thickly and strongly ciliated on their outer sides in *lugubris*; and lastly, by the internal transverse vein being placed before the centre of the discoidal cell in *lugubris*, instead of behind it as in *dubia*, and therefore some way before the termination of the auxilliary vein.

H. dubia bears considerable resemblance to *H. serva*, but may be easily distinguished by the arista being much longer-haired in the latter species, and by there being four thoracic setæ behind the suture in *dubia* and only three in *serva*. By the light grey colour and distinct stripes of the thorax, *dubia* bears a considerable resemblance to *H. læta*, but the latter has only three posterior thoracic dorsal bristles as in *serva*, and pale coloured tibiæ.

(To be continued).

ON THE SUPPOSED EFFECT OF THE WINTERS IN JAPAN ON THE SMALLER *COLEOPTERA*.

BY GEORGE LEWIS.

The cold weather commences here early in December and continues until the close of February, the whole of this period being excessively dry, and this year no rain-fall has been registered since the 26th November, except a "trace of rain" on the 30th December.

The following is extracted from the meteorological reports published in the daily papers:

	1879—1880.	1878—1879.
December...	·271 inches of rain and snow.	·088
January ...	nil.	1·325
February ...	3·505 (1·487 last week).	3·973 (3·250 in last week).

The winters in Japan vary little, and a two years' record suffices to show the average amount of rain and snow, but the fall in the other nine months of the year is variable and uncertain; the annual downpour being in one year 42 inches, and in another 122 inches. An average of seven years, 1863—1869, gives 70 inches, two-thirds of which fell in the six months of April to September. In winter the wind is almost continuous and often boisterous, and this adds to the dryness, and as there is little dew, freezing is attended with the least possible hoar frost. Where there are no trees, the hills and land generally are covered with a small grass, with species of *Arundinaria* and *Bambusa*, and these are all dry and yellow, and a stranger might well conceive that the grass was dead and beyond recovery. Ridges and banks are dry, and even the edges of ponds afford no swampy or marshy places, and the only contrast to all this hay-coloured landscape are the patches of *Amaryllidæ* which have thrown up dark leaves in the more *sheltered situations*; with herbage like this there is no hiding-place for small beetles; there are no tussocks or compact roots where they can hibernate—moss and everything else is all dry and dusty together.

If I went out to hunt as I should do in England, I should probably not see a *Homalota*, perhaps not even a *Philonthus*; but in haystack refuse I should get one or two specimens of *Corticaria*, a *Pæderus*, and a few of the exceedingly common *Ancylopus*. The chances would be against my seeing *Stenus*, *Quedius*, *Cryptophagus*, or *Atomaria*. In a general way, there are no beetles to be had; a few only may be found under the small loosened pieces of bark on *Planera acuminata*—a mode of collecting familiar to entomologists who have wintered at Cannes or Mentone. But if I go to the hills and bluffs, or to the plantations, seeking out the sheltered spots and working round the edges of ponds or reservoirs (where water is permanently stored for irrigation), I find nothing, all is dry down to the water's edge. In the forests, at altitudes of 2500 and 3000 feet, more can be done in barking the beeches and oaks, and by knocking the large decayed trees to pieces over a cloth; but even in the mountains there is no moisture in the moss, and nothing living inhabits it.

The 22nd and 23rd December I spent in an elevated forest about 50 miles from this, and if I mention the genera I found, it will show the character of my captures. All occurred in fair numbers, and many abundantly. *Cucujus*, *Brontes*, *Pediacus*, *Læmophlœus*, *Prostomis*, *Cicones*, *Rhysodes*, *Endophlœus*, *Tarphius*, *Elater*, *Platypus*, *Trypodendron*, a few *Piestini*, and two tree *Homalotæ*. Of the described *Coleoptera* of Japan at this time, not one per cent. are *Homalotæ*; and although I have recently added a large number to the list, I believe there are not more than four or five (amongst the new ones) of this genus; yet, in spring and summer, I have been very careful not to neglect the smallest *Brachelytra*. A few *Homalotæ* or *Oxypodæ* put into a pill-box and stored in a dry room, will soon be dead, and the dryness of the winter here corresponds with the pill-box condition of such beetles. It might be thought that in a country like this, where insects attain, as a rule, greater dimensions than in Europe, the smaller ones would give place to the larger, but second thoughts will not favour this view, and I am inclined to refer the scarcity of little beetles wholly and simply to the dryness in the winter season, and I believe that on investigation the *Tineæ* will be found to exist here in the same proportion only. Last spring and summer I obtained very few small *nidæ* in profusion, viz., *Philonthus cyanipennis* and *Oxyporus angularis*, which are giants to the little animals which form the majority of their family in Europe.

In Yezo, and in the north of the main island, much snow falls in the three months I refer to; but the moisture arising from it, such as would support insect-life, would chiefly operate when it melted in the spring. I think, therefore, with very slight modifications for various latitudes, my remarks on the climate will apply to the whole of this empire, for in the north there is a drier autumn, which would counteract any advantage derived from the snow.*

Grand Hotel, Yokohama:
January 16*th*, 1881.

THE *COLEOPTERA* OF ASKHAM BOG, YORK.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

Askham Bog has long been known to Entomologists as one of the best localities in the kingdom for water beetles. Thanks to the kindness of Archdeacon Hey, who may be said to have made the locality, specimens of its chief productions are in most good collections, but few people are aware of the number of species that exist within quite a small area. The Bog is a depression of the boulder clay, filled with peat, and is very likely a solitary relic of a bog that once extended over a much wider area; in fact, there are signs, at present, which seem to show that even the portion that is left will, at no very distant period, be dried up.

The Bog may be divided into two portions, Askham Bog proper, which is not very productive, and Chandler's Whin; between these two parts only one or two fields intervene, but the fauna seem almost entirely different. Chandler's Whin, in which almost all the good things are found, consists of some dozen or so small ponds edged with deep moss, and separated from one another by most treacherous grassy ground, or, where there is a rise, by small slopes covered with gorse and trees; the divisions are only a few yards wide in many cases, and yet the species of insects, and the relative numbers of the species, are singularly different in the different ponds; this is probably due to the influence of springs, character and thickness of the bottom soil, and the different growth of plants consequent thereupon, and though worth mentioning, is not by any means a strange fact, when we remember how very local many insects are even on land, and how they may be found in profusion within a few yards, while, outside that line, not a specimen is to be taken.

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* P.S., Jan. 27th. The humidity registered by the wet and dry bulb thermometer on the 25th January, was 7 a.m., 37 °/o, and 7 p.m., 34 °/o, but of course this is exceptional even here.

In compiling the following list, I have been greatly assisted by Archdeacon Hey and his son, the Rev. W. C. Hey. I have inserted common as well as rare species, as in many cases the species that abound elsewhere are conspicuous for their rarity.

The list contains 40 *Hydradephaga* and 20 *Philhydrida*, besides other rare beetles.

HYDRADEPHAGA.

Haliplus obliquus, F., rare; I have only found one specimen. *H. ruficollis*, De G., abundant.

Hyphydrus ovatus, L., abundant in Askham Bog; unknown in Chandler's Whin, until I took a single specimen on April 30th last.

Hydroporus inæqualis, F., not very common. *H. decoratus*, Gyll., abundant, but confined to Chandler's Whin; this is by no means a common insect elsewhere; Stephens (Illust., ii, 41) says that he only knew of one or two British specimens. *H. granularis*, L., very abundant. *H. dorsalis*, F., apparently not very common. *H. oblongus*, Steph., rare, but can generally be found; it is apparently an early spring insect. *H. rufifrons*, Duft., rare; only found in a stream running along one side of Askham Bog proper. *H. erythrocephalus*, L., very common. *H. lituratus*, F., not common. *H. planus*, F., very abundant. *H. melanocephalus*, Steph. (*pubescens*, Gyll.), common. *H. nigrita*, F., not common. *H. tristis*, Pk., not common. *H. obscurus*, Sturm, common. *H. vittula*, Er.: it is doubtful whether this insect has ever been found in the Bog; I am inclined to think that another species has done duty for it. *H. palustris*, L., conspicuous by its rarity in Chandler's Whin; common elsewhere. *H. angustatus*, Sturm, not uncommon. *H. Scalesianus*, Steph.: Stephens named this species after Mr. R. Scales, who took two specimens in Norfolk (Illust., ii, 57); this locality was, however, lost, and the insect was never again found until Archdeacon Hey discovered it in Askham Bog, or rather Chandler's Whin; it is always rare, but may be taken sparingly at certain times of year, it seems to be attracted by cow-dung in the water; Chandler's Whin is, as far as I know, the only British locality, at present known, for this species, which appears to be rare on the continent. *H. lineatus*, F., common, but local.

Noterus sparsus, Marsh., abundant.

Laccophilus minutus, L., not very common.

Ilybius fuliginosus, F., common. *I. ater*, De G., common. *I. obscurus*, Marsh., not uncommon. *I. guttiger*, Gyll., not uncommon.

Colymbetes fuscus, L., apparently rare; I have not seen a specimen in the Bog myself. *C. Grapii*, Gyll., rather common; more frequently met with than any other *Colymbetes*. *C. exoletus*, Forst., rather common.

Liopterus ruficollis, Schal. (*Agabus agilis*, F.), rather common; this used to be considered a rarity, but seems now to be common: I have taken it both at Askham Bog and near Lincoln, not uncommonly this year.

the *Agabi*, though rare in most localities, is the commonest insect in the Bog, and, at certain periods of the year, may be taken by hundreds. *A. unguicularis*, Th., very common.

Dytiscus marginalis, L., not uncommon. *D. circumcinctus*, Ahr., rare; a few specimens have been taken.

Hydaticus transversalis, Berg: several specimens have been taken on one side of a small pond in Chandler's Whin, but it has occurred in no other part of the Bog.

PHILHYDRIDA.

Hydrobius fuscipes, L.: this ubiquitous insect is as abundant as it seems to be everywhere else.

Helochares lividus, Forst., not common.

Philhydrus testaceus, F., very plentiful. *Ph. nigricans*, Zett., not uncommon. *Ph. ovalis*, Th., not common. *Ph. suturalis*, Sharp: this seems very abundant; it appears to be this species, and not *marginellus*, F., as the yellow spots on the clypeus are well defined in all the specimens I have examined.

Anacæna variabilis, Sharp, very common.

Laccobius minutus, L., very common.

Limnobius truncatellus, Thunb., not uncommon. *L. picinus*, Marsh.: this beetle, the smallest of the *Philhydrida*, is exceedingly abundant; I have also found it near Stamford Bridge, a few miles from York, but have never come across it elsewhere.

Chætarthria seminulum, Pk., common.

Helophorus aquaticus, L., *granularis*, L., and *griseus*, Hbst., all very common. *H. æneipennis*, Th.: I know of only one specimen of this insect having been taken in the Bog.

Ochthebius pygmæus, F., common.

Hydrochus elongatus, Schall., not common.

Hydræna riparia, Kug., common. *H. palustris*, Er., not uncommon; this is one of the specialties of the Bog.

Cyclonotum orbiculare, F., common.

Besides water beetles, several exceedingly good species are taken in Askham Bog: the best of these is the very distinct and very rare *Pselaphus dresdensis*, Hbst., of which about a specimen a year is found; *Gymnusa brevicollis* also occurs; *Oodes helopioides* is not uncommon; and *Blethisa multipunctata* has been once taken under rubbish. The Bog has not been worked systematically for the semi-aquatic insects; but *Bagous petrosus*, *Tanysphyrus lemnæ*, and *Phytobius comari* are found, and probably many other species might be. *Donacia lemnæ* is at times abundant, but only in one particular pond, and other species are perpetually turning up.

I may add that the Bog is now closed to the public, but leave to work it can be obtained through Archdeacon Hey, in whose company I have, within the past year, taken the greater number of the species above mentioned, and who is as enthusiastic a collector now as he was in the old days of Curtis and Stephens.

Lincoln: *May 11th, 1881.*

LIST OF *LEPIDOPTERA* OBSERVED IN THE NEIGHBOURHOOD OF GALLIPOLI, TURKEY, IN 1878.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

On the 1st of May, 1878, I arrived at Gallipoli, and joined H.M.S. "Cygnet," and from that date up to the 12th of August, the ship was employed between Gallipoli and the Bulair lines, being about a fortnight at each place alternately, with one exception, when we took a three days' cruise to the Marmora islands. During this period I devoted a good deal of my spare time to collecting and observing the *Lepidoptera* of the vicinity; perhaps, a list of the species taken, together with notes of their habits, and descriptions of a few of their larvæ, may not be altogether uninteresting.

Before commencing the list it may be as well to give a rough account of the country. My hunting-grounds in the neighbourhood of Gallipoli comprised a belt, extending along the coast to the valley of Ak-y-lar, some six miles to the south-westward of the town, and about three miles in width inland to the westward. In the town itself, and its environs, there were numerous gardens, where a variety of fruit trees were cultivated; and in the low-lying country beyond, there were extensive fields of wheat, barley, maize, and cotton, interspersed with large vineyards, cherry orchards, and olive groves, with occasionally a fine old walnut or poplar-tree rearing its head far above its neighbours, and forming, in many cases, a conspicuous landmark. Through these fields ran the Utze Kionpron Dérèh, a small muddy stream, with elm, plane, poplar, and willow trees growing on its banks, and the undergrowth luxurious, in places, with impenetrable masses of brambles, blackthorn, honeysuckle, &c., while directly out of its black slimy bed sprung a profusion of sedge, *Lythrum*, *Eupatorium*, sweet-smelling *Galium*, and a variety of rushes. As one passed, frogs innumerable leapt nimbly from the banks, and mud-covered terrapins shuffled clumsily into the rank herbage, or dropped with a dull splash into the dirty ooze. Sailing and flapping above the stream, or quartering the adjacent fields, were graceful harriers and lazy buzzards on the look-out for frogs or lizards, and high in the clear sky the little kestrel (*Falco tinnunculoides*) hovered with quivering wings, waiting his turn for a swoop at similar prey. Above the cherry and olives the brilliant-hued bee-eaters hawked in flocks, while the no less beautiful roller flew from tree to tree. From the shadiest retreats came the soft notes of doves, and the pretty black-headed bunting side of the stream crested larks delighted to dust themselves, and from the corn fields their larger brethren, the Calandra larks, sprang, and with joyous notes ascended aloft until nearly lost to sight. Here and there a huge stork walked sedately on the look out for a meal for his family, who were waiting his return in their nest on a neighbouring chimney.

Above the cultivated fields, towards the valley of Ak-y-lar, the country rises into rounded hills or downs, intersected at every half-mile by narrow gullies, through which, during the winter months, little streams run into the sea, but in the summer only a few stagnant pools remain. Patches of prickly mimosa (the "wait-a-bit" thorn of sportsmen), stunted blackthorn bushes, and tufts of rushes, grow sparingly in these valleys; while the downs themselves are covered with mosses, lichens, thistles, wiry grass, cotton rush, and innumerable clumps of a low-growing prickly shrub, which, at a distance, looked like heather. As one walked across, two or three species of *Zygæna* would fly heavily by and settle on a thistle flower; but, with the exception of *Vanessa cardui*, *Lepidoptera* on these uplands were by no means abundant, being represented throughout May and June by *Colias Edusa*, *Melanargia Galathea* and *Larissa*, *Epinephele Janira*, *Spilothyrus alceæ*, *Hesperia Thaumas*, *Macroglossa stellatarum* and *croatica*, &c., and the following month *Satyrus Briseis* and *S. statilinus var. Allionia* were the only notable additions. A remarkable Neuropteron (*Ascalaphus Kolyvanensis*), with conspicuous black and yellow wings, was somewhat plentiful, and when first seen, was taken for some species of *Zygæna*, as it flew much in the same fashion.

On arriving near the valley of Ak-y-lar, the downs gradually slope towards the stream of Buyak Dérèh, which flows through its centre, and on the opposite side there is a broad tract of cultivated country, bounded beyond by a lofty range of thickly wooded hills. The bed of this stream is in some places thirty or forty yards wide, and although in the summer it contains but little water, yet it was easy to see that it is occasionally swollen by winter rains into a formidable torrent. Trees and brushwood grow plentifully on its banks, and, in addition to the species already enumerated as flourishing by the side of the stream near Gallipoli, elm, oak, broom, and barberry were observed. However, notwithstanding that this valley, in comparison with the surrounding country, looked favourable as a collecting ground, yet, on trial, it did not quite come up to one's expectations. *Limenitis Camilla* floated gracefully amongst the brushwood wherever honeysuckle grew; *Lycæna Argiolus* confined itself to the barberry bushes, upon the flowers, flower-buds, or tender leaves of which its larvæ perhaps may feed (for there was no holly to be seen); *Vanessa c-album* and *V. polychloros* were rather scarce, but to be found during the warmest part of the day sitting on the trunks of plane and willow trees in shady spots, where also *Pararge Roxelana*, a butterfly of retiring habits, was first noticed. In open places among rushes and coarse grass *Melanargia Larissa*, with its variety *Herta*, *Spilothyrus altheæ*, *Hesperia Thaumas* and *Actæon* were numerous, and now and then *Heliothis dipsaceus* and *H. armiger* might be seen on a thistle head; but the grandest prize of all was the beautiful *Argynnis Pandora.*

The other hunting grounds were near the celebrated Bulair lines, a few miles to the eastward of Gallipoli, and were bare as compared with the locality above described, for every tree or bush that could afford shelter to an advancing enemy had been cut down. Nevertheless, there were a few favoured spots which invariably produced something fresh at each visit. Our position was about two hundred yards from the shore, and, upon landing, we had to cross a narrow belt of sandhills into an extensive grassy plain, which, in some places, was damp, marshy, and overgrown by rushes. Beyond this the hills rose in undulating slopes to the heights of Bulair, upon the summit of which stood Fort Sultan, commanding the whole country on each side of the isthmus, from the gulf of Xeros on the north, to the shores of the sea of Marmora on the south. In addition to this huge fort, there were a number of smaller ones thrown out in advance on the crests of the surrounding hills, and the whole, at the time we were there, were occupied by some 25,000 men. The little valleys between these hills, being near and convenient, were the chief collecting grounds, although the heat during the middle of the day was very great, and there was scarcely any shelter, and but little breeze until three o'clock in the afternoon, at which time it was usually the custom to go on shore. Of course the whole country was overrun by Turkish soldiers, and they displayed a considerable amount of curiosity at my entomological proceedings, following me about, and asking all manner of questions; but as I did not understand a word of their language, nor they of mine, our conversation could hardly be called interesting, although a good deal was to be made out by "dumb show." One day an intelligent-looking old Turk evidently fancied he had discovered what I was up to, for he came running to me with a small black beetle (a *Cantharis*, I believe) in his hands, showed it to me, then smashed it make out, turned round and informed his companions that I was a doctor. After this, I often had two or three soldiers following me, and they would run after butterflies, knock them down with their fezs, and bring me the mangled remains! I used to pretend to be much obliged, and rewarded them with cigarettes.

The Turkish soldiers and peasantry are a fine set of fellows, and I always met with the greatest civility from them. Many of the farms in the neighbourhood of Gallipoli are owned, or rented, by Greeks, and the difference between the two races was most marked. In this country, where there are scarcely any public roads, one had constantly to pass through vineyards and gardens, where the Turk would always salute one courteously, and often offer fruit; whereas, the Greek would scowl and mutter what (if one could have understood it) was doubtless abuse.

But to return to Bulair. I was often fond of landing early in the morning, before breakfast, bathing in the beautiful blue water, and then taking a stroll for an hour over the sandhills into the rushy plain beyond. Calandra larks at this time of the day would be in full song overhead; terns busily flitted along shore, and occasionally darted down and secured a silvery little fish, although withal angry at the invasion of their domain, for they were nesting close at hand, as were also Kentish plovers, and on the plain, a colony of pratincoles. Amongst the rushes on the sandhills several species of *Ino* buzzed about commonly, also *Botys sanguinalis*, and a long-legged queer-looking *Pyrale* (*Ilurgia* ——?, a species I saw unnamed in the British Museum), while the larvæ of *Thais cerisyi* in certain places were frequent. Just above high water mark, on plants of *Verbascum nigrum*, larvæ of *Melitœa Trivia* were abundant, and one morning, while taking some of them, I noticed a tiny ball of dusky down hiding away beneath a bunch of leaves, and, upon picking it up, discovered I had found a young Little Tern, such a pretty creature. Upon setting it down, it ran off sturdily, and soon hid itself again, to the evident satisfaction of its parents, who were clamouring vociferously overhead. The plains produced *Melanargia Larissa*, *Polyommatus Thersamon*, *Agrophila sulphuralis*, &c., in numbers, and I generally went on board to breakfast with my boxes full.

It will be observed that the following list (wherein I have adopted the arrangement and nomenclature of Dr. Staudinger) contains very few *Noctuæ* and *Geometræ*, and this is owing to the fact that it was not considered safe to go into the country after nightfall, as there were many tramps and refugees about, who might have attempted to rob one, although by day, I have been miles away by myself, and was never molested.

(To be continued).

NOTES ON *THYSANURA* COLLECTED IN THE CANARIES AND MADEIRA.

BY H. N. RIDLEY, M.A.

By the kindness of the Rev. A. E. Eaton, I have received several specimens of *Thysanura* collected by him in the above-mentioned localities, in the latter part of the year 1880; among them were specimens of *Lepisma saccharina*, L., from the hotels at Puerto de la Orotava, in Teneriffe, and Los Palmas, in Grand Canary. This insect is common in houses all over Europe, and is possibly indigenous, but I have never heard of its being found at any distance from human habitations; it would be interesting to discover the extent of its distribution, and whether it lives anywhere independently of man.

Lepisma mauritanica, Lucas. There are two specimens agreeing closely with Lucas' description of this insect, except in two or three points. Lucas describes his specimen (for he only took one) as yellowish-grey, washed with brown: whereas, my specimens are said to have been of a dark mouse-brown colour. Lucas also affirms that the spots in the two exterior rows on the abdomen are much larger than those of the inner row; I can, however, see no difference in mine. Lastly, he says that the first abdominal segment has no spots; but in these specimens they are plainly visible. I have no doubt, however, that I am correct in referring these specimens to that species, they were taken near Los Palmas and on Pico Bandana, under stones, at an altitude of from 350—1500 feet. Lucas' specimen was collected in Algiers.

There are also in the collection several specimens of a *Lepisma*, which appear to me to be new; they were taken at Santa Cruz de Teneriffe, on a hill above the town, and under stones, at an altitude of 500 feet, and also under stones at Safi, on the Morocco coast, in the months of December and January.

LEPISMA EATONI, *n. sp.*

Length, 9 mm. Breadth of thorax in the widest part, 2 mm. Colour, with the scales, dark grey above, under-surface lighter, anal region fuscous; without the scales dull yellow. Antennæ three-fourths of the length of the body, inserted in front of the eyes, the basal segment broad, the second short and thick, fuscous, with the apex darker, the rest of the antennæ light brown, pilose. Head short and broad, distinctly separated from the thorax, fore-part covered thickly with fawn-coloured hairs. Thorax long, not much broader than the head, segments equal, sides and breast covered with rather long fawn-coloured hairs, which, on the lateral margins, spring from about seven dark spots. The abdomen tapers but little, and is short in contrast with the long thorax: the caudal setæ are brown, with rings of white, pilose; but as they are not perfect in any of the specimens, I cannot give their length

The Insectarium at the Zoological Gardens.—Within the last few weeks a new house in the Zoological Society's Gardens has been opened, which promises to be of great interest to the public generally, and to entomologists in particular. This is an "Insectarium," or house devoted to the exhibition of living specimens, in their various stages, of the class of Insects. Such an exhibition is not absolutely new, it is true, for something of the kind has been tried already in this country at the Westminster Aquarium, as well as on the continent at the Hamburg Zoological Gardens. In neither case, however, was the experiment made on any large scale, and in the first instance at least, it has not proved, hitherto, a great success. The "Insectarium" stands in what is known as the "North Garden"—as the slip of land lying on the Northern bank of the Regent's Canal is called—not far from the northern entrance to the gardens. It is of an oblong shape, with a glass roof, and with three of its sides, including the south one, also consisting largely of glass. The remaining or northern side is of cement and brick. The floor is paved with tiles, and beneath it hot-water pipes run round the house, which admit of its being kept up to any necessary temperature.

The larger insects are exhibited in glass cages, provided with tops of perforated zinc, and with metal floors in which can be inserted, if necessary, a flower-pot with growing plants for the larvæ to feed on. These cages, which are rather larger than an ordinary Wardian case, are arranged along two sides of the house, those on the south side being at present chiefly occupied by various exotic silk-producing Bombyces, whilst the smaller ones on the north are devoted to English *Lepidoptera* of various species. On tables in the middle of the room are bell-glasses with various aquatic insects, as well as other cages containing smaller species, or very young larvæ of *Lepidoptera*, together with a few insects of other groups.

At the present time, the *Lepidoptera* are best represented. There is a good collection of the cocoons of the Bombyces exhibited, and many of these have come out, and produced beautiful imagos. Amongst others, *Samia Gloveri* and *P. Cecropia*, *Attacus Atlas* and *Actias luna* may be mentioned as having been exhibited alive during the past few weeks. Eggs of most of these have also been obtained, so that no doubt before long, larvæ of them will be visible, though at present the only silk-moth larvæ shown are those of *A. Yama-mai.*

Of European *Lepidoptera*, imagos of *Papilio Machaon*, *Melitæa Cinxia*, and *Nemeobius Lucina* may be seen, whilst there are larvæ, in various stages, or pupæ of many others, amongst which those of *Melitæa Maturna*, *Apatura Ilia*, and *Iris*, *Limenitis populi*, and *Sibylla*, and *Catocala fraxini* are, just now, perhaps the most interesting.

The other Orders are represented chiefly by aquatic forms at present, in the shape of sundry *Hydradephaga* and *Philhydrida* from amongst the *Coleoptera*, by larvæ of *Agrion*, *Libellula*, and *Ephemera*, together with *Phryganidæ* in their cases, *Nepa*, *Notonecta*, and a few others. The *Hymenoptera* are, as yet, hardly represented, though in time there seems no reason why the visitors to Regent's Park should not be able to study for themselves the habits of the ant and the economy of the hive-bee. Perhaps Sir John Lubbock could help here?

As yet, of course, only a beginning has been made, but enough has even now, we think, been done to prove the success of the experiment, which is of course capable of development to almost any extent. As the season advances, the number of insects exhibited will no doubt become much increased, whilst constant changes, both as regards the condition of the specimens and the various forms exhibited, will always give the charm of novelty to a visit to this house. It is to be hoped, indeed, that at no distant period the Londoner may be able to contemplate at leisure the charms of a live *Morpho* or *Urania*, without going further from his home than the Regent's Park.

The Insectarium is under the charge of Mr. W. Watkins, already well known to many readers of this magazine, and under him will no doubt daily increase in efficiency and attraction, and so perform its main mission of instructing and amusing the public When more experience in the working of the Insectarium has been gained, it may also be possible to utilise some of the opportunities now afforded for experiments in such matters as the effect of increased temperature or moisture in producing variation in insects. It would also be interesting to experiment further on the reproduction of *Aphides*, with the object of discovering how many generations in succession of agamo-genetic individuals (if the term may be thus used) could be produced under circumstances favourable for their propagation presented in the Insectarium.—W. A. Forbes, Zoological Gardens: *May* 10*th*, 1881.

Notes on Micro-Lepidoptera.—Coleophora olivaceella. I was fortunate enough last year to find cases of this rare insect at Armathwaite, near Carlisle. When first noticed, attached to the trunks of trees near *Stellaria holostea*, they were supposed to be cases of *Col. solitariella*, and it was not until the autumn, when I had time to compare the perfect insects which emerged, with a description in a number of the Entomologist's Intelligencer, that the truth was suspected. The larvæ of *olivaceella* appear to feed up in autumn and retire to tree trunks, and perhaps other similar places, for refuge during the winter, thus imitating the habits of *Coleophora Wilkinsoni* exactly. I have not seen the mine, as the larvæ collected last Whitsuntide and bred, and the insects collected this month have alike utterly refused food and appear to be even in the pupa state. In a notice some years ago by Mr. Stainton, he represents the mine as being greener than that of *solitariella*, and he found larvæ *feeding* in April, which is extremely puzzling.

The cases are almost prostrate on their resting place and are, compared with *solitariella*, shorter, stouter, and more yellow, dusted with greyish spots. The imago is rather like *solitariella*, but is larger, of a darker colour, its wings broader and more glossy, and when the series of each insect are compared the difference is at once very apparent.

Tinea argentimaculella. I think that Armathwaite has also yielded me the larvæ of this insect, as I found many delicate tubes amongst the grey lichens on the rocks, tenanted by light green larvæ with black heads.

As I cannot find anywhere a description of the larvæ of this species, this must be considered as a mere conjecture, hazarded with the view of extracting information from any one who may know.

Elachista humilis. This insect also puzzles me. Can it be the male of *Elachista perplexella?* The Manual says of it "♀ unknown." Now in Brockholes

Mr. Murray, of Carnforth, has last year added two species to the Witherslack list, in a male of *Psyche opacella* and one of *calvella*, both of which he most kindly presented to me. We have together looked for cases of these, but are yet unsuccessful.—I. H. THRELFALL, Preston: *April 27th*, 1881.

[I give here a copy of the description of the larva of *Tinea argentimaculella*, made April 13th, 1859, from larvæ kindly sent me by the late Mr. R. S. Edleston. "Length 3 lines. Elongate, slender, greenish-white; the spots darker, but inconspicuous, except two larger darker spots on the sides (the upper one being darkest "and largest) of the 3rd and 4th segments; head black, and 2nd segment black, "except in front. Makes long green tubes of lichen and web."—H. T. STAINTON.]

Suggestions for obtaining the eggs of Acentropus.—I am extremely anxious to study the early stages of *Acentropus niveus*, and shall feel very much obliged to any one who will procure me some eggs: if a small tightly-fitting tin box or two, which would not add much to the collector's *impedimenta*, were carried with the usual chip boxes, and any females that might be captured, were shut up in them with small sprays of the *Potamogeton*, a little wetted, I think the danger of the eggs drying up would be greatly obviated, and I should have a good chance of receiving them in safety, for they might travel through the post in the same boxes.—WM. BUCKLER, Emsworth: *May*, 1881.

Tortrix Lafauryana, Ragonot, a species new to Britain.—It is with pleasure that I record the capture of the above species. Whilst collecting Micros in July last year, a few miles from this town, I beat out two specimens of a *Tortrix* which I was unable to name. I sent them to Mr. C. G. Barrett, who kindly informed me that they were *T. Lafauryana*. They were taken in a boggy portion of a heath.—E. A. ATMORE, 8, Union Street, King's Lynn, Norfolk: *May*, 1881.

[*Tortrix Lafauryana* was described by M. Ragonot in the Ann. Soc. Ent. France, 5^{me} série, vol. vi, p. 403 (1876), and also figured. He says that it has been confounded with *croceana*, Hüb., from which it may be easily distinguished by the costal fold in the male; also that it is allied to *sorbiana*, forming a passage from it to the species with pale hind-wings. His description is long, and it will be sufficient to say that *Lafauryana* has a folded and strongly arched costa, hollowed before the apex, the male resembling *sorbiana*, but with shorter wings and yellower colouring, the female approaching more in colouring to *heparana*. The fore-wings in both sexes are glossy, and the hind-wings of a decidedly *pale* grey. One of Mr. Atmore's specimens agrees most accurately with M. Ragonot's types, the other is redder and more like the female in colour.

This is a very handsome addition to the British fauna, and not easily mistaken for any other species. The locality given by M. Ragonot is Dax (Landes), France.

The larva, which he describes as very variable, feeds there on *Myrica gale*, joining together the terminal leaves, and is very subject to parasites. The species has since been discovered in Holland (*vide* Tijdschrift voor Entomologie, vol. xxii, p. 128).—C. G. BARRETT, Pembroke: *13th May*, 1881].

Vanessa Antiopa at Llandaff.—Shortly after eleven this morning, I disturbed one of these rare visitors in the drive here. It took several high flights around the tree, but very kindly returned close to me several times, and had I been provided with a net I could have caught it easily. During a long course of years this is only the second specimen of *Vanessa Antiopa* I have seen at Llandaff.—J. EARLE OLLIVANT, Bishop's Court, Llandaff: *May 9th*, 1881.

Note on the earlier states of Psylla buxi.—This is one of the commonest species of the genus. The terminal shoots of the plants of the Box *(Buxus sempervirens)* may now be found filled with the creature in its earlier stages. The deformation the shoots assume, caused by their attack, tends to turn the leaves towards each other when they assume a somewhat oval or globular shape. On opening one of these the cavity will be found to contain a quantity of white or starch-coloured opaque particles, amongst which the young green larvæ and nymphs will be found, the former easily distinguished from the latter by their somewhat smaller size and the want of the elytra-lobes.—JOHN SCOTT, Lee, S.E.: 14*th May*, 1881.

Note on Aphalara nervosa.—Next month is the time for capturing this species of *Psyllidæ* on the yarrow (*Achillea millefolium*), and where the plant grows profusely, I believe the insect, from what I have experienced here, will also be found in considerable numbers. Singularly enough, with all my painstaking, I have been unable to capture the creature in its earlier stages, and I shall feel obliged to any one who takes an interest in the group and is fortunate enough to meet with it in these states, who will forward some to me for the purpose of describing and figuring. Coleopterists are likely to meet with it when sweeping the plant in search of *Ceuthorhynchideus Chevrolati* which is attached to it, and is to be met with at the same time although not in such fine condition as in September, when the newly-emerged insects are in their greatest perfection.—ID.

Additions to the Morayshire Hemiptera.—In addition to my previous list of bugs occurring in Morayshire, I have to record the following species taken last summer at Forres. *Gastrodes abietis*, in fir cones wherever looked for; *Gerris spera, Athysanus brevipennis, Trapezonotus agrestis, Stiroma albomarginata, Eupelexa producta*, and *cuspidata*, both frequently on a dry grass bank, also bred from larvæ; *Liburnia discolor, Deltocephalus*, species not yet determined, and *Athysanus striola*, common in swamps; *Typhlocyba cratægi*, beam tree; *T. abrotani*, in profusion on Southernwood; *T. Douglasi*, on beech; *Pantilius tunicatus*, in abundance on hazels.—GEO. NORMAN, Athole House, Pitlochry, N.B.: *May 9th*, 1881.

The muscular power of Rhagium inquisitor.—Having noticed the strength of jaw of several beetles and other insects, I tried some experiments with a specimen of *Rhagium inquisitor*. The beetle was held between the finger and thumb, and the

The greatest weight raised was 5 ounces, or 2187·5 grains; the beetle weighed exactly 4 grains in a chemical balance, so that it supported in its jaws 547 times its own weight: this is in the same proportion as if a man of 11 stone were to support 37½ tons, a fact that shows clearly the enormous strength not only of the jaws but also of the neck- and other muscles of the beetle. After seeing this experiment, the large weights that one often sees ants carrying to their nests seem quite to sink into insignificance.—W. W. Fowler, Lincoln: *April 19th* 1881.

Rare Coleoptera near Hastings.—About June or July last, I took three or four specimens of *Cænopsis fissirostris* by sweeping in a wood at Guestling. I have also taken *Athous difformis*, which I believe is one of our rarer species of *Elateridæ*, both at Guestling and also nearer Hastings. *Hippodamia* 13-*punctata* has also occurred in a damp place near here. These are last year's captures. The only good thing I have met with this year is *Harpalus servus*, taken at roots on the Camber Sandhills, near Rye.—E. P. Collett, 12, Springfield Road, St. Leonards-on-Sea: *16th May*, 1881.

The generic term "Degeeria."—"New species of *Degeeria*." Seeing this announcement in the table of contents of the last number (May) of this Journal, I at once turned to the page (vol. xvii, p. 270) in which it was described, and being a Dipterologist, of course supposed that it referred to a new parasitic fly belonging to Meigen's well-known genus *Degeeria* (Fam. *Tachinidæ*); I was, however, disappointed, and found that the creature in question belonged to a far different Order. I have been induced to make these remarks in consequence of the careless way in which new genera are named.

Meigen separated the Dipterous group in question from the great genus *Tachina* in the year 1838, describing the genus *Degeeria* in the 7th volume (p. 249) of his work on the *Diptera* of Europe, while Nicolet gave the same name to a genus of *Thysanura* in 1841?; therefore, the Dipterous genus must take precedence. Rondani, in the 4th volume of his "Dipterologiæ Italicæ Prodromus," p. 40, has the following note on the genus *Degeeria*: "*Degeeriæ*, Nicol., in Thysanuris propositum 1841, nomen mutandum in *Entomobrya*."—R. H. Meade, Bradford: *May 14th*, 1881.

[Mr. Meade's citation of the first use of the term "*Degeeria*" by Meigen, in *Diptera*, in 1838, is quite correct. Nicolet afterwards used it for a genus of *Thysanura* (*Collembola*) in his "Recherches pour servir à l'histoire des Podurelles," p. 70, published in vol. vi of the Nouveaux Mémoires de la Soc. Helvét. des Sci. Nat. (= Neue Denkschriften schw. Gesell. für Naturwissenschaften), 1842 (not 1841). Hence there was no necessity for Rondani's change of *Degeeria*, Meigen, into *Entomobrya*; if a change were necessary, it should have been made by the students of *Thysanura*.

The "Nomenclator Zoologicus," by Agassiz, has been generally looked upon as a guide to generic terms published up to about 1847, but in this case it is an untrustworthy guide. *Degeeria*, Nicolet, is noticed as a genus of *Thysanura*, without date, but no mention whatever is made of Meigen's prior Dipterous genus of the same name.—R. McLachlan].

Review.

Papilio; devoted to *Lepidoptera* exclusively. Organ of the New York Entomological Club. Nos. 1—3, January—March, 1881, pp. 1—42, 8vo (Communications to Mr. Henry Edwards, 185, East 116th Street, New York).

A nicely printed and generally well got-up Magazine, of which it is intended to issue ten parts per annum. The publication Committee consists of Messrs. A. R. Grote, Hy. Edwards, and T. L. Mead, whose names are well known to Lepidopterists generally. According to a prospectus, support has been promised from most of the prominent American Entomologists. The contents consist principally of descriptions of new species; amongst the few more general articles is one by Dr. Hagen on the probably apocryphal *Papilio ecclipsis*, L.

In No. 1 is a coloured plate representing a beautiful moth recently described as *Edwardsia brillians!* (Neumoegen), an unfortunate name, the generic term having been preoccupied for about forty years, the specific suggesting a scarcity of Latin dictionaries in the States.

We trust that "Papilio" will have more than the short, if merry, life the title suggests; omission of the words "devoted to *Lepidoptera* exclusively" in the title, and acting up to the omission, will certainly tend to the realization of this wish, and also elevate the Members of the Club in the estimation of other Entomologists.

Obituary.

Baron de Chaudoir.—We regret to have to announce the decease of this eminent Coleopterist. Next month we hope to give a notice of his life and labours.

John Blackwall, F.L.S., died on May 11th, at the great age of 92; a short notice will appear next month.

Entomological Society of London: *4th May*, 1881.—H. T. Stainton, Esq., F.R.S., &c., President, in the Chair.

The following were elected, viz.: R. W. Fereday, Esq., of Christchurch, Canterbury, New Zealand (formerly a Corresponding Member), and C. Foran, Esq., of Eastbourne, Members; and James Edwards, Esq., of Norwich, Subscriber.

Mr. Roland Trimen exhibited ♂ & ♀ of *Papilio Cænea*, Stoll, taken *in copula*, the ♀ of which he considered the mimic of a day-flying *Noctua*. He also exhibited specimens of *Tinea vastella*, Zell. (*gigantella*, Staint.), the larvæ of which had fed in an inkstand fabricated from a hoof of the late Prince Imperial's horse, from which multitudes of the insect appeared. Mr. Stainton said he considered it was still an open question as to whether this moth attacked living animals.

The Secretary read a letter received from the Colonial Office, relative to the appearance of *Phylloxera* on the vines in Victoria; this letter was accompanied by the minutes of evidence taken before a Committee of the Victorian Legislative Assembly, and by other documents. The President announced that the Council had appointed a Committee, consisting of Messrs. Fitch, McLachlan, and Trimen, to investigate and report upon the matter.

AN ANNOUNCEMENT OF NEW GENERA OF THE *EPHEMERIDÆ*.

BY THE REV. A. E. EATON, M.A.

(*continued from Vol.* xvii, *p.* 197).

CALLIARCYS, *n. g.*

Allied to *Habrophlebia* and *Thraulus*, having forceps like those of the latter, but hind-wings like those of the former in outline: cross-veinlets in both wings more plentiful than in *Habrophlebia.* Three long, sub-equal, caudal setæ, in ♂ nearly half as long again as the body. Fore tibiæ of ♂ about a sixth longer than the femur, the tarsus half as long again as the same; hind leg about one-sixth longer than the intermediate leg; hind tarsus about a third as long as the tibia; ungues of hinder tarsi dissimilar in form and size. Proximal joint of ♂ forceps' limb by far the longest. Type *Calliarcys humilis, n. sp.* Distrib., Portugal and, perhaps, W. Indies.

Calliarcys humilis, n. sp.

Sub-imago. Wings tinted with greyish-black.

Imago (dried), ♂. Thorax deep black above, glossy; abdomen piceous with pale joinings. Legs piceous, the hinder tibiæ and tarsi rather paler. Wings vitreous, slightly tinted with brownish; their neuration piceous-brown. Forceps pale piceous, or pale yellowish-brown. Setæ pale fuliginose, with reddish joinings.

Long. corp., ♂ ♀, 7—9; al., ♂, 7—8·5, ♀, 9; set., ♂, 10—11·5 mm.

Hab.: common on the northern slopes of Foia, near Monchique, and sparingly in other parts of Portugal. Mistaking the imago for *Thraulus*, I did not search for the nymph.

At p. 196, l. 21 from bottom, *after* "sexes, and" *insert* "usually."

The prior name, *Isonychus*, Mannerheim, precluding the employment of *Isonychia*, Etn., *Chirotonetes* may be substituted for the latter. It equals *Baëtis*, Walsh, Section B.

In *Heptagenia* and kindred forms, the first and second of the axillary nervures in the fore-wing run sub-parallel with one another, and rather close together, to the inner margin, meeting it either near the anal angle, or at least midway between this and the wing-roots. The nervures interposed between the first axillary and the anal nervure constitute a definite abbreviated group, and do not simulate short branchlets of the anal nervure (in *Siphlurus*, &c., they do). So far as I have been able to ascertain, amongst forms ranked with *Heptagenia* in 1871 (= *Baëtis* of most authors, but not of Leach), the chief differences in the proportions of the tarsal joints, discernible in the imagines, correspond with differences in the nymphs; and, consequently, I am disposed to accept these differentia as bases for the distinction of genera, although they are only in a few instances accompanied by differences in the neuration of the wings, or in the number of the caudal setæ. To make a complete survey of this group of genera, *Ametropus* may as well be referred to.

AMETROPUS, Albarda.

Intermediate tibia shorter than the tarsus, the proximal joint of the latter about half as long as the former. Fore tarsus in ♂ about four and three-fifths, in ♀ about twice and two-thirds, as long as the tibia; the proximal joint in ♂ once and a half, in ♀ three-fifths, as long as the tibia. Three long caudal setæ. Type, *A. fragilis*, Alb. Distrib., Holland.

ATOPOPUS, *n. g.*

Hind tibia about half as long as the tarsus, the proximal joint of the latter rather longer than the former. Fore tarsus in ♂ nearly one and two-fifths, its proximal joint almost half, as long as the tibia. The proportions of the intermediate tarsus are more largely in excess of the tibia. Relative lengths of tarsal joints:—fore leg, 24, 18, 14, 8·5, and 6; intermediate, 31, 11, 7, 4, and 5; hind-leg, 30·5, 9, 6, 3, and 5. Two caudal setæ, in ♂ about twice as long as the body. Type, *A. tarsalis*, *sp. n.* Distrib., Borneo.

Atopopus tarsalis, n. sp.

Imago (dried). Body above piceous-black, with the last segment or two of the abdomen flavescent; belly flavescent. Fore-leg piceous-black, the femur to the middle piceous-brown; hinder-legs with femora piceous-brown, tibiæ flavescent, and tarsi rather deep fumatose, with the joinings and apical joint darker. Wings vitreous, with black neuration: fore-wing with the marginal area beyond the middle, and in part nearer the base, the sub-marginal area almost to the base, and a short narrow cloud upon the terminal margin by the anal angle, and the hind-wings likewise bordered round the apex and along the terminal margin, piceous-brown. Setæ piceous-black. Long. corp., ♂, 9—10; al., 11; set. 20 mm.

Hab.: Labuan.

THALEROSPHYRUS, *n. g.*

Hind tibia of ♂ as long as the tarsus, whose proximal joint is about a third as long. Fore-legs damaged in the specimens examined by me. Relative lengths of the posterior tarsal joints:—intermediate tarsus, 10, 7, 5, 3, and 4; hind tarsus, 10, 7·5, 6, 3, and 4. Two caudal

PÆGNIODES, *n. g.*

Hind tibia of ♂ about twice as long as the tarsus, whose proximal joint is about one-eleventh as long as the tibia. Fore-leg of ♂ damaged in the specimens examined; in ♀ the tarsus is nearly three-quarters as long as the tibia, and its proximal joint about one-ninth as long. Relative lengths of tarsal joints:—fore-leg, ♀, 6, 13, 11, 5, and 6; intermediate, 5, 7, 7, 2, and 5; hind-leg, 5, 7, 7, 3, and 5. Two caudal setæ, in ♂ twice and two-thirds (?), in ♀ thrice and three-eighths, as long as the body. Type, *P. cupulatus* (in *Heptagenia*), Etn. Distrib., China and Tibet.

COMPSONEURIA, *n. g.*

Hind tibia of ♀ about twice and a quarter as long as the tarsus, whose proximal joint is about one-tenth as long as the tibia. Fore-tarsus in ♀ very nearly as long as the tibia. Relative lengths of tarsal joints, in ♀:—fore-leg, 18, 23, 16, 8, and 12; hind-leg, 10, 9, 5, 3, and 10 or 11. Cross-veinlets in the disc of the fore-wing very sparse, disposed in only three transverse broken series. Two caudal setæ. Type, *C. spectabilis, n. sp.* Distrib., Java.

Compsoneuria spectabilis, n. sp.

Imago, ♂ (dried). Ochraceous or pale straw-yellow, varied with fusco-piceous on the thorax. Hind-legs (the others lost) pale straw-yellow; the trochanter, median and apical band of the femur, base of tibia, and the tarsal joints very narrowly at the joinings, black-piceous. Wings vitreous, with pellucid longitudinal nervures, excepting that the costa, sub-costa, and radius towards their extremities are piceous; cross-veinlets piceous, narrowly clouded with the same colour. Last two abdominal segments pale; the others edged narrowly above with black at the tips, and with a line on each side near the spiracles, obliquely recurrent from this edging also black; the third, fourth, sixth, and seventh have, besides, a lanceolate black streak in the middle of the back produced out of the same edging: forceps and belly ochraceous.

♀ (dried) very similar, but with the body luteous instead of ochraceous.

Long. corp., ♂ ♀, 6; al., ♂, 7, ♀, 8 mm.

Hab.: Lahat (Leyden Mus.), from Mr. C. Ritsema.

RHITHROGENA, *n. g.*

Imago. Hind tibia of ♂ about twice and one-half as long as the tarsus, whose proximal joint is scarcely more than one-thirteenth as long as the tibia. Fore tarsus in ♂ nearly half as long again as the tibia, in ♀ scarcely upwards of half as long as the tibia; the proximal joint in ♂ about one-eleventh, in ♀ about one-fifteenth as long as the tibia. Relative lengths of tarsal joints:—fore-foot, ♂, 6·5, 27, 27, 18, and 9, ♀, 4, 9·5, 8, 5, and 10; hinder feet nearly as 3, 3, 3, 2, and 7. Two caudal setæ, usually twice, or twice and a half as long as the body. Penis-lobes narrow, very slightly enlarged at the tip.

Wings of sub-imago usually unicolorous greyish, the nervures not conspicuously darker.

Nymph with seven pairs of abdominal tracheal branchiæ; *the first pair very large, ventral,* the laminæ broad, slightly curved, flattened, and contiguous at their tips with one another beneath the base of the abdomen; the next five pairs lateral, their laminæ deflected, so as to be almost out of sight from above; the last pair meet one another underneath the body, and their laminæ are folded lengthwise: tracheæ not obvious; the fasciculated fibrils are scarcely two-thirds as long as the laminæ. Head much flattened, somewhat transverse: labrum distinct, small. Mandibles terminated by a single, large, acutely-triangular fang, with a smaller tooth at its inner base; the former nearly half as long as the interval between the base of the latter and the point of the molar tuberosity. First joint of the upper maxillary palpus largely dilated behind, and about half as long as the second joint, which is slightly dilated before the tip. Lateral lobes of the tongue narrower than the median lobe. Caudal setæ three, subequal to each other. Type, *Rh. semicolorata* (in *Baëtis*), Curt = *Baëtis*, Walsh, Section C. Pictet, Mon. Ephem., pl. 21, f. 1, seems to be a nymph of a *Rhithrogena*; but I think *B. lateralis*, to which he refers it, is a species of *Ecdyurus*. Distrib., Europe and N. America to Oregon.

HEPTAGENIA, Walsh (restrict.).

Imago. Hind tibia of ♂ about twice and a half as long as the tarsus, whose proximal joint is about one-eighteenth as long as the tibia. Fore-tarsus in ♂ about once and two-thirds, in ♀ about two-thirds, as long as the tibia; the proximal joint in ♂ about one-fourteenth, in ♀ about one-eleventh, as long as the tibia. Relative lengths of the tarsal joints:—fore-foot, ♂, 4, 28, 28, 18, and 7·5, ♀, 4·5, 10, 8, 3·5, and 7; hinder feet, ♂, 2·5, 4, 4, 2·5 or 2, and 8. Two caudal setæ, usually in ♂ twice, in ♀ once and a half, as long as the body. Penis-lobes rather broad and divergent from one another.

Wings of sub-imago usually of a yellowish tint, and at first almost unicolorous; in the next place the cross-veinlets become darkened; and still later, transverse fasciæ and streaks of a similar dark greyish hue are developed in the disc of the wing. The sub-imago in repose

Nymph with seven lateral pairs of abdominal tracheal branchiæ; *the laminæ small*, nearly alike in form, reflected backwards and outwards, with their edges up and down; their tracheæ indistinct; *the fibrils abundant, and about as long as the lamina.* Head rounded and broadly flattened out; postero-lateral angles of pronotum rectangular or obtuse; *labrum not obvious*, a velvety fold of the palate taking its place. Mandibles terminated by two strong slender fangs, of which the outermost is the stronger, and is about as long as the interval between the base of the other and the point of the molar tuberosity. First joint of the upper maxillary palpus about two-thirds as long as the second, and rather stouter than it. Lateral lobes of the tongue broader than the median lobe. Caudal setæ three. Type, *H. flavescens*, Walsh. Distrib., Europe, N. America, Cape Colony.

ECDYURUS, Etn. (revived; misspelt *Ecdyonurus* in Trans. Ent. Soc. Lond., 1868, p. 142, n.; corrected in E. M. M., v, 90).

Imago. Hind tibia of ♂ about once and three-quarters as long as the tarsus, whose proximal joint is almost one-ninth as long as the tibia. Fore-tarsus in ♂ nearly, or quite, twice as long as the tibia, rarely so little as one and two-thirds as long; in ♀ from three-quarters as long, to almost the same length, as the tibia; the proximal joint in ♂ from nearly one-third to four-ninths, in ♀ from about one-fifth to one-seventh as long as the tibia. Relative lengths of the tarsal joints: —fore-foot, ♂, 12, 24, 22·7, 17, and 9, or 23, 31, 33·5, 23, and 17·5, or 19, 30, 28 7, 22, and 18; in ♀, 7, 8. 7, 4, 7, or 7, 9, 8, 5, and 8; hinder feet, ♂, 5, 4, 3·5, 2·5, and 6. Caudal setæ in ♂ two and a half to three times as long as the body, in ♀ about once and a half as long. Penis lobes very broad.

Wings of the sub-imago at first greyish with dark neuration, usually edged with grey; afterwards, in most cases, dark transverse bands and fasciæ appear in the disc of the fore-wings.

Nymph with seven lateral pairs of tracheal gills, the first the smallest; laminæ reflected obliquely outwards: with distinct tracheæ; *the branchlets of the median trachea usually pinnately arranged* in some of the laminæ; fibrils nearly as long as the lamina in the first three pairs, and nearly half as long as it in the others. Head rounded and broadly flattened out; *postero—lateral angles of the pronotum prolonged backwards.* Labrum distinct, small. Mandibles with two strong slender fangs, the outermost of which is about one-third as long as the interval between the base of the other and the point of the molar tuberosity. First joint of the upper maxillary palpus about half as long as the second, and rather stouter than it. Lateral lobes of the tongue broadly claw-shaped, with the points turned outwards, narrower than the median lobe. Three caudal setæ. Pictet, Mon. Ephem., pl. 16, f. 1—7, may be an *Ecdyurus*, but, if so, are apparently not accurate in minutiæ. Type, *E. venosus*, Fab. Distrib., Europe and N. America.

EPEORUS, *n. g.*

Imago. Hind tibia of ♂ about twice and a half as long as the tarsus (in Colorado species twice and one-fifth), whose proximal joint is almost one-twelfth as long as the tibia (Colorado one-eleventh). Fore-tarsus in ♂ about once and one-sixth (Colorado nearly once and a half), in ♀ nearly three-quarters as long as the tibia. Relative lengths of the tarsal joints:—fore-foot, ♂, 18, 18, 15, 13, and 9 (Colorado, 32, 32, 32, 23, 10); ♀, 7·5, 8, 7·5, 5, and 8; hind-foot, ♂, 4·5, 4·5, 3·5, 2, and 6 (Colorado, 4·5, 4·5, 4·5, 3, and 7). Caudal setæ two, in ♂ about twice and three-quarters, in ♀ twice, as long as the body. Penis lobes of moderate breadth, divergent.

Wings of sub-imago greyish, or sometimes yellowish, with dark neuration, but with neither fasciæ nor streaks.

Nymph with seven pairs of lateral tracheal branchiæ on the abdomen, the fibrils scanty, not half as long as the lamina, to whose edge they stand at right angles; the laminæ decumbent, with a submedian trachea rather irregularly branched. Head rounded, flattened. Labrum distinct, small. Mandibles terminated by a pair of short broad teeth, the outermost less than half as long as the space between the base of the other and the point of the molar tuberosity. First joint of the upper maxillary palpus almost two-thirds as long as the second, rather stouter than it, and slightly dilated. Lateral lobes of the tongue relatively large, oblong. *Median seta absent in the adolescent insect.* Hind edge of pronotum straight. Type, *E. torrentium, n. sp.* Distrib., Portugal, the Pyrenees, the Alps, and, perhaps, also Oregon, Colorado and Costa Rica. [The American species have, perhaps, rather slenderer legs than the European.]

Epeorus torrentium, n. sp.

Imago (living), ♂. Oculi above dark fuscescent, darker beneath. Thorax lutescent above. Abdomen above, fusco-luteous, paler at the sides, with oblique piceous streaks from the dark tips of the segments; the usual pale dorsal spots very distinct from the second to the eighth segment; beneath, with a dark ventral stripe enlarged posteriorly in each segment, and containing four darker lines. Neuration of wings black. Fore-legs piceous, or luteo-piceous, the tarsal joinings paler, the ungues alike and sub-equal; hinder legs gamboge-yellow, with the usual bands

Description of ♀ and sub-imago deferred.

Long. corp., ♂, 11, ♀, 13; al., ♂, 12, ♀, 15; set., ♂, 28—29, sub-im., 17, ♀, 22—26, sub-im., 19 mm.

Hab.: in a mill stream at Tarascon (Ariége). August and September.

My introductory caution against laying too much stress upon the admeasurements given in the descriptions of the genera should not be lost sight of. Accidents in early life, to which the legs and setæ are very liable, interfere with the dimensions in the adult insect; and some allowance must be made for exceptional peculiarities in the fore tarsus of the ♂ of certain species, all of which are not indicated here. The hind tarsus is less liable to variation.

Croydon: *April*, 1881.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ.*

BY R. H. MEADE.

(*Continued from page* 5).

3. MYDÆA, R. Desv.

Spilogaster, pt., Auctt.
Aricia, pt., Macq.

Gen. ch.—Eyes bare, contiguous, or sub-contiguous in male; arista plumose; abdomen mostly oval, and always unspotted; alulets well developed, the under scale being much longer than the upper one; anal vein not prolonged to the margin of the wing.

With legs wholly black.

1. VESPERTINA, Fall.
2. NIGRITELLA, Zett.
3. ALLOTALLA, Meig.

With legs partly pale.

4. URBANA, Meig.
5. ANGELICÆ, Scop.
6. TINCTA, Zett.
7. PAGANA, Fab.
8. NIGRICOLOR, Fall.
9. IMPUNCTA, Fall.
indistincta, Rond.
10. SEPARATA, Meig.
11. FLAVEOLA, Fall.
varians, Zett.

The species placed in this group form part of the genus *Spilogaster* of most authors, but differ from those properly belonging to that genus by having unspotted bodies. The genus *Mydæa* is closely related to *Hydrophoria*, but may be distinguished from it by the species having the abdomen usually oval and not conical, and not having the anal vein prolonged to the posterior margin of the wing.

M. NIGRITELLA, Zett.

This little black and rather rare species bears a very considerable resemblance to the common *M. vespertina*, but differs by having the abdomen narrower and more elongated; the halteres black, not yellow; the wings clear, not blackened; the posterior tibiæ ciliated along both sides, not bare; and furnished with a single strong spine at the end, on the inner side.

M. ALLOTALLA, Meig.

This is rather an aberrant species, the generic position of which is somewhat doubtful; by the shape of the abdomen it resembles a *Hydrophoria*, but the anal vein is not prolonged to the border of the wing. It seems to be rare, or rather local.

M. URBANA, Meig.

In one variety of this common species the males have the anterior femora pale like the females, without any black colour, even at their bases.

M. ANGELICÆ, Scop.

It is almost impossible to distinguish this species from *M. urbana*, which it closely resembles, by the description of the older authors. Meigen described it as having both scutellum and abdomen ferruginous, and evidently confused it with quite a different species. Fallén, Zetterstedt, and Schiner, chiefly distinguish it from *M. urbana* by the external transverse vein of the wings being more upright than in that species; this character, however, is quite insufficient, and it remained for Rondani to point out a true characteristic difference. He noticed that in *M. angelicæ* the penultimate or third abdominal segment was crossed in the middle of the dorsum by a transverse row of strong bristles, in addition to the row on the distal margin; while in *M. urbana* the middle or disc of the same segment is without distinct bristles. Besides this character, the arista has much shorter hairs in *M. angelicæ* than in *M. urbana*; the external transverse vein is much less oblique; the fore femora in the females are partially blackened at their bases, and not wholly yellow as in *M. urbana*. Rondani says that the size of the former is rather less than that of the latter species.

This fly is decidedly rare in England. I have only seen one female, which I captured in September, 1878, at Clapham-in-Craven, Yorkshire.

Among some unarranged British *Diptera* collected many years ago, I find a single male of an apparently new species of *Mydæa*, related in some points to *M. angelicæ* and *M. urbana*. It is more elongated in shape and rather larger than either of those species; the penultimate abdominal segment is furnished both on the disc and margin with numerous long setæ, irregularly arranged; the longitudinal dorsal abdominal stripe is wider and more maculiform; and the legs have peculiarly long tarsi. Unfortunately, it is too imperfect for accurate description, the terminal joints of the antennæ being absent, as well as both the anterior legs.

M. SEPARATA, Meig.

This species closely resembles *M. impuncta*, but differs in having the basal joints of the antennæ and the palpi black, and not pale as in the latter species; the arista has also rather shorter hairs; and the eyes in the male are rather wider apart. It is rare.

M. FLAVEOLA, Fall.

This species closely resembles *Hyetodesia pallida*, but the eyes are bare and not hairy, and the arista has shorter hairs. The females of this species are not uncommon,

LIST OF *LEPIDOPTERA* OBSERVED IN THE NEIGHBOURHOOD OF GALLIPOLI, TURKEY, IN 1878.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

(*continued from page* 13.)

RHOPALOCERA.

Papilio Podalirius, L.—Tolerably common. The first specimens were observed the 18th May, flying about gardens at Bulair, and occasionally settling on the flowers of a small umbelliferous plant. At Port Baklar, about two miles from Bulair, it was noticed by Mr. J. J. Walker, R.N., of H.M.S. "Swiftsure," as early as 16th April. A female was one day seen depositing her eggs on a stunted sloe bush growing in a wild spot far away in the country, but they were usually to be found near gardens. In a waste piece of ground, just outside Gallipoli, a great quantity of scabious was in flower in August, and here *Podalirius* assembled in goodly numbers, and was easy to capture. It is not as strong on the wing as *Machaon*.

Papilio Machaon, L.—Common. A very worn individual observed on the 6th June, but it must have been out long before this date, for Mr. Walker noticed it at Port Baklar on 21st April. A fresh brood made their appearance on 23rd June, and there appeared to be a succession of broods up to the end of October, as larvæ of all sizes were noticed from end of June to 19th November. On 7th November a single larva was discovered, feeding on a particularly disagreeable smelling species of *Euphorbia*.

Thais cerisyi, B.*—Perfect insect not seen, but the larvæ were by no means uncommon. They are soft and flabby to the touch, sluggish in their movements, and semigregarious in their habits, many being found on the same plant. When not feeding they rested on the under-side of a leaf, on the mid-rib. They did not seem to be attacked either by birds or ichneumons. Their food-plant (*Aristolochia*), which has a peculiar and very pungent smell, was extremely local, only occurring in small quantities in one or two places on the sandhills, to the northward of the Bulair lines.

The following is a description of the full grown larva. Length, 1 in. 5 lin. to 1 in. 7 lin. Cylindrical, tapering towards anal extremity; ground colour canary or lemon-yellow, sometimes faintly suffused with pink; dorsal stripe rather broad, deep lead colour, enclosing a linear-shaped black spot towards the anterior part of each segment; a subdorsal dusky streak, enclosing a triangular blotch of a deeper hue, on each segment; a small dusky blotch above each clasper; spiracles minute, black, encircled by a pale ring; a subdorsal row of pink fleshy spines, the spines slightly covered with fine pale yellow bristles; a spiracular double row of similar spines, the upper series seated upon a loose skinfold, and all the spines are faintly tipped with black; under surface and claspers same as above; legs dusky; head slightly retractile, with an oval, ocellated, dusky spot on each side of face, and a triangular-shaped black spot on lower lip. A common variety of this larva was altogether lemon-yellow, with no perceptible dorsal stripe, but two minute black dots on each side of the

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* In Mr. Walker's "Notes on the Butterflies of Port Baklar, Turkey" (Ent. Mo. Mag., Feb., 1879, p. 194), he says that I found the larvæ of *Thais Polyxena* "commonly at the end of June, on the Marmora side of the isthmus." This was an error on my part, for when I took the larvæ I thought they were *Polyxena*, and only discovered my mistake when the perfect insect appeared in April, 1879. I never saw *Polyxena*.

dorsal area; a minute black dot at the base, and behind each sub-dorsal spine; a larger black dot between each of the spines, composing the double spiracular series; spines, spiracles, claspers, &c., the same as above. All the spines, with the exception of those on the second segment, which incline forward, incline backwards. When full grown the larva selects a dry stem or root near the surface of the ground, attaches itself by its anal extremity to a pad of silk, spins a thread around its middle, and remains for nearly three weeks before changing to a chrysalis. The chrysalis is very rigid, elongated, dull straw-colour, with a dark spiracular streak enclosing the black spiracles; wing cases somewhat short and rounded; dark dorsal and interrupted subdorsal streaks; a deep impression between the base of wing and base of antenna sheath. The perfect insects began to appear at Malta the end of April, 1879, and many beautiful varieties were bred.

Aporia cratægi, L.—Very abundant. On 11th May the full grown larvæ were in great numbers on sloe and other bushes, and on the 18th of the same month the perfect insects began to appear. By the 23rd they were out in certain localities in countless swarms. On some evenings, especially when it was calm and sultry, they assembled in vast multitudes, and were to be seen at rest on grass and flower-stems, in such numbers that the stalks were quite bent down by their weight. The males far exceeded the females, although the latter were to be seen weeks after the former had disappeared. Flight comparatively heavy, and therefore easy butterflies to capture. Some of the females were very large and darkly coloured.

Pieris brassicæ, L.—Very rare in the neighbourhood of Gallipoli, and only noticed upon one or two occasions. It was, however, very abundant at the Dardanelles, where larvæ were observed in profusion up to the end of December, and at Ismid I found a larva just attaching itself to a wall as late as 2nd February, 1879, and there had been plenty of frost and snow for some weeks previous.

Pieris rapæ, L.—Common throughout the whole district, though never very abundant. In some specimens taken the black spots were entirely absent. The larvæ were tolerably plentiful in October and November on *Cruciferæ*.

Pieris napi, L.—Rare; only one or two examples noticed.

Pieris Daplidice, L.—Common throughout the district; and there was evidently a succession of broods from April to October. A strong, quick-flying butterfly, and found in almost all localities, although, perhaps, preferring waste places by roadsides, where a variety of herbage flourished. Females were observed on several occasions depositing their eggs on *Cruciferæ*. On 3rd August, I found some half-grown larvæ in the valley of Ak-y-lar, but did not rear any of them, for on the 5th August I went to Constantinople for a week, leaving the larvæ in charge of my servant, and upon my return I found he had neglected them, and they had perished. On 17th of the same month, many more larvæ were seen at Besika Bay, only they were too small to take; but on the 21st October, at Artaki, I discovered many larvæ, from the tiny individual just hatched to those just preparing to pupate, and continued to find them from this date up to the middle of November. These larvæ were easily detected, as their yellow dorsal and sub-dorsal stripes made them very of the remainder some appeared at Malta in March and April, and the rest in England in May and June, 1879. The larvæ were very subject to the attacks of a fly (sp. ?); those so attacked changed to healthy-looking chrysalids, and remained so throughout the winter, but at the beginning of March the affected chrysalids turned a deep brick-red colour, and in a few days disclosed a fly.*

The following is a description of the full-grown larva:—Length, 1 in. to 1 in. 2 lin.; cylindrical, very slightly pubescent; lead colour, thickly irrorated with minute black dots, placed in pairs upon the dorsal region, in fives between the sub-dorsal and spiracular streaks, and irregularly below; a narrow, yellow, sub-dorsal and spiracular stripe, much brighter at the segmental divisions; head bluish or bluish-green, with black dots and a yellow spot on each side of the face; legs and pro-legs paler than the upper surface, the latter with a yellow spot at their base. Chrysalis ashy-brown, with small black spots, and faint yellowish sub-dorsal and spiracular streaks; wing-cases with a dark central shade, and the margins and sheath of proboscis yellowish. Some hours before the perfect insect appears the black wing-spots can be distinctly seen through the sheath.

Anthocharis Belia, Cr.—Common. First observed 11th May; another brood in July. A quick-flying insect, and occurring chiefly in rough waste places. The females were observed once or twice depositing their eggs on a dwarfed species of *Cruciferæ*, but although I subsequently examined the plants, and beat them, I failed to discover the larvæ.

Anthocharis cardamines, L.—Very rare. I only observed one specimen, a male, which was captured on the sand-hills near Bulair lines, on 12th May.

Leucophasia sinapis, L., *var. lathyri*, Hb.—Not uncommon in some localities. A delicate weak-flying butterfly.

Colias Edusa, F.—Very common from May to September, and some of the specimens were remarkably bright. The *var. Helice* was by no means scarce, and I obtained several fine examples.

Rhodocera rhamni, L.—Rare; a few specimens observed, but only one, a ♀, captured.

Rhodocera Cleopatra, L.—Apparently very rare, as only one specimen, a ♂, was observed on 13th June flying across the Ak-y-lar valley. Upon looking over a small collection of butterflies made by a midshipman of H.M.S. "Agincourt," I noticed a single male, and was informed that it was captured close to Gallipoli.

Thecla ilicis, Esp.—Very abundant. The first were observed on the 29th May, and by the 6th June it was out in prodigious numbers, and proved quite a pest, for one could not strike at another species without enclosing five or six of them at the same time. They were most plentiful amongst scattered bushes of stunted *Ilex*, where they were fond of collecting upon the heads of a sweet-smelling umbel, or upon the pretty purple flowers of the gum cistus. These Turkish specimens appear to belong to a slightly smaller and darker race than those from central Europe, and out of the large number captured there was not a single specimen with the orange blotch on the fore-wings.

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* My friend, Mr. G. C. Bignell, of Plymouth, to whom I sent some of these chrysalids, bred an ichneumon (*Anomalon xanthopus*) from them.

Polyommatus Thersamon, Esp.—Common, and there seemed to be several broods during the summer, for it was noticed from the beginning of June up to the 28th November. This species was very partial to the flowers of the field scabious, and the males were much more plentiful than the females. They were difficult to obtain in perfect condition, for, being always ready to give battle to any passing insect, they soon became ragged and torn. Some examples taken at Artaki, on the Asiatic side of the sea of Marmora, at the beginning of October, were slightly smaller and paler than those taken in Turkey.

Polyommatus Alciphron, Rott., *var. Gordius*, Sulz.—Only took a single example, a male, as it was sitting enjoying the flowers of the peppermint.

Polyommatus Dorilis, Hufn.—Appeared to be rare, as I only saw and captured a pair.

Polyommatus phlœas, L.—Abundant, and a succession of broods throughout the summer. On 17th of June, we visited the island of Pachalimon—one of a group in the sea of Marmora—and, as we stopped there for some hours, I landed to look for butterflies, hoping to find some species that I had not noticed on the mainland, but nothing fresh turned up, the only thing of interest being the immense swarms of *phlœas*. It was a terribly hot day, and the butterflies had collected in shady spots in the ravines, where the sun could not penetrate. A blow with my beating stick brought them out of the bushes in hundreds, and I often had more than a dozen in my net at a time. These examples were so very dark, that at first I thought I had a new species, but they proved to be the variety *Eleus*, of Fabricius.

Lycæna bætica, L.—Common, especially wherever wild vetches grew. There were several broods during the summer, and I noticed it throughout November and December, and up to 4th January, 1879.

Lycæna Telicanus, Lang.—Local, but common in certain places among *Lythrum salicaria*, L., vetches, and other papilionaceous plants.

Lycæna, n. sp.?—One specimen, above very like *Telicanus*, but totally distinct beneath. I could see nothing like it in the British Museum.

Lycæna Argiades, Pall.—Rare and local, and was difficult to obtain in perfect condition.

Lycæna Pylaon, F. de W.—Rare, only two or three examples.

Lycæna Bavius, Ev.—A single female.

Lycæna Astrarche, Bgstr. (*Agestis*, Hb.).—Common.

Lycæna Icarus, Rott.—Abundant. Turkish examples vary a good deal both in size and brilliancy of colour.

Lycæna Amanda, Schn.—This fine species was somewhat rare and local, and the males were difficult to obtain, as they were very quick and strong on the wing.

Lycæna Admetus, Esp.—Not uncommon, but very local.

Lycæna Argiolus, L.—Common, and double-brooded. I fancy the larvæ of the second brood feed upon the flowers and tender shoots of a species of *Berberis*, for

NOTE ON THE EGG, AND SOME PECULIARITY OF STRUCTURE IN THE LARVA, OF *HIMERA PENNARIA.*

BY THE REV. J. HELLINS, M.A.

Early last December Mr. D'Urban put into my hands an ash twig gathered by a laudable butcher's-boy, whose attention had been caught by the appearance of a batch of eggs near the tip. I ought at once to have known to what species these eggs belonged, but, luckily, did not recognise them ; otherwise, probably, I should not have cared for them, and should have missed making an observation which, I think, deserves some notice.

There were just 151 eggs, laid in nine rows, parallel with the stem of the twig, in most beautifully compact and regular order, the whole mass measuring rather more than $\frac{3}{8}$ inch in length, and about $\frac{3}{16}$ in width, and firmly stuck together, and to the bark of the twig, by an abundant supply of shining light red cement. The shape of the egg is cylindrical, set upright on end, about $\frac{1}{30}$ inch in height, and $\frac{1}{48}$ inch in transverse measurement; the top is rounded ; sometimes the cylindrical shape becomes somewhat hexagonal, from being squeezed in so closely on all sides, the shell is glossy, with a slight roughness round the top ; the colour dull pale green ; towards spring this changes to a pale reddish-brown, and again four or five days before the larva emerges to a blackish hue. The batch of empty egg-shells looks like a piece of Lilliputian honeycomb.

The first larva was hatched on April 13th, and the last that came out about a fortnight later ; some died in the egg ; I think, however, that the larvæ at large were delayed this year by the cold nights, and that none, probably, were hatched till the end of April : at least, the larvæ I have captured have been quite three weeks behind my larvæ reared indoors.

The young larva is about $\frac{1}{18}$ inch in length, in colour dull black, except the anal flap which is pale brownish, as also are the legs, tipped, however, with black ; the usual spots palish brown with raised central black dot emitting a short, finely-knobbed bristle ; as the larva feeds, the colour grows paler, becoming a sort of dark olive, with pale lines : one, which I set apart for observation, moulted for the first time just a fortnight after hatching, and I noted that at this first moult there appeared the two projecting warts on the twelfth segment, which (with other circumstances) enabled me to recognise the species—but I presently also noted another change which puzzled me greatly; I took these little larvæ to be *H. pennaria*—a species in which I had never before seen more than ten legs, nor had any one described it with more than ten legs, but now there appeared *a pair of undeveloped ventral legs on the ninth segment*; as I have inferred, I certainly did not see these legs previous to the moult, nor do I think they were then to be seen, but what follows makes me wish I had made quite certain: this pair of legs continues through the second moult, becomes smaller after the third moult, and *with the fourth moult disappears*, the site being marked by a minute eminence, and afterwards by a *little horny depressed plate*; and the larva to all appearance has but the ten legs with which it has always been credited. At their fullest development these extra legs are very tiny, still they are plainly enough to be seen, and are more like the rounded ventral legs of a *Noctua* than the spreading, clinging legs of a large Geometer; they have a black ring round them midway, and a circle of tiny black horny points where the usual circlet of hooks is found.

Both Mr. Buckler and Dr. T. A. Chapman have confirmed my observation from examination of examples which I have sent them, and we are now examining as many species of the large Geometrous larvæ as we can obtain, but so far without finding any evidence of a similar absorption or suppression of a leg once developed. In other species, as, for instance, in *Anisopteryx æscularia* (Ent. Mo. Mag., vol. xiv, p. 113), we find such legs developed after a moult or two, but continuing to the last in the same proportionate size; on the other hand, many *Noctuæ* when hatched have only two out of their four pairs of ventral legs of full size, but the other two by degrees grow larger, and at last take their full share in walking and holding fast.

But in this case a pair of legs is developed, is of no use at any time, and, by and by, is again suppressed; the only thing like it at all, which I can now call to mind, is the appearance of two horns behind the head of the newly-hatched larva of *Cerura vinula*, which by degrees are absorbed and disappear; still, this does not seem so strange as the appearance and subsequent disappearance of even an useless limb.

THYREOPHORA ANTIPODUM, NEW SPECIES OF *DIPTERA*.

BY BARON C. R. OSTEN-SACKEN.

In the Ent. Mo. Mag., vol. xv, p. 43, I had occasion to mention the genus *Thyreophora*, in connection with the subject of luminous *Diptera*. The singular and very rare fly, *Thyreophora cynophila*, was believed to have a luminous head. But to the quotations which I gave at that time I should have added that of Robineau-Desvoidy, Ann. Soc. Ent. Fr., 1849, Bullet., p. v, who says that his experiments did *not* confirm Count St. Fargeau's statement on that subject.

Independently of its supposed luminosity, *Thyreophora* is a fly remarkable for its structure. It has a largely developed scutellum, prolonged almost like a horn, truncate at the tip, where two bristles are inserted. Schiner forms for this genus a separate group, intermediate between the *Scatophaginæ* and *Helomyzinæ*. The colour of *T. cynophila* is also striking and unusual among the relationship to which it belongs, being bright metallic-blue with a reddish-yellow head. The colour of the other species, *T. furcata*, is more dull. Both flies are rare; the specimens of *T. cynophila* existing in European collections can almost be counted. I am not aware that the third species, *T. anthropophaga*, R.-Desvoidy, has been recorded anywhere since his time.

Not long ago, in looking over the store-boxes containing duplicates and unnamed specimens, in my friend, M. Bigot's, collection, I had the good fortune to discover two specimens of a *Thyreophora*, labelled "Tasmania." With M. Bigot's permission, I described them on the spot, as the first instance of the genus being found outside of Europe. The species is remarkable for a row of spine-like bristles along the costal margin of the wing, a character foreign to its European congeners, and justifying its assumed relationship to *Helomyza*.

THYREOPHORA ANTIPODUM, *n. sp.*

♂. Brownish-ferruginous; antennæ and abdomen black; wings sub-hyaline, unicolorous; costal margin provided with a series of spine-like bristles (like those of *Helomyza*). Length, 4—5 mm.

In the generic characters this species agrees with *T. cynophila*; the eyes are larger, as compared to the size of the head; the third joint of the antennæ is less rounded, more oblong; the venation is the same, only the section of the costal vein anterior to the end of the first vein is straight (and not arcuated as in ♂ *T. cynophila*). But a more important difference consists in the row of spine-like bristles inserted along the costa, and resembling those which characterize most *Helomyzidæ*. Head and thorax brownish-ferruginous; third joint of antennæ and ocellar spot black. Scutellum of the same truncate-triangular shape as in *T. cynophila*, but less hairy. Abdomen black, hairy, shining. Legs brownish-ferruginous, more or less dark (in one of the specimens the hind legs are dark brown with a slight metallic reflection). Tarsi brown at the end. Wings uniformly sub-hyaline; veins brownish-yellow.

Hab.: Tasmania; two male specimens (M. Bigot's collection, in Paris).

Heidelberg: *June*, 1881.

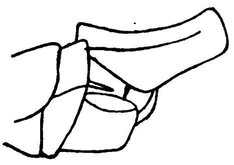
ON TWO NEW *PANORPIDÆ* FROM WESTERN NORTH AMERICA.

BY R. McLACHLAN, F.R.S., &c.

The two species described below were lately received in a collection formed by Mr. H. K. Morrison, of Morganton, North Carolina.

Bittacus chlorostigma, *n. sp.*

♂. Shining reddish-piceous (the head and thorax reddish-testaceous in less adult individuals); apical abdominal segments darker, sometimes nearly blackish. Antennæ black, with very short concolorous pubescence; the first two joints of the ground colour. Rostrum blackish; the superior dilated portion of the ground colour; palpi clothed with black hairs. A black spot on the head between the ocelli. Thorax, and base of abdomen beneath, with scattered black spinose hairs, of which three on each side of the front of the pronotum are the most conspicuous. Legs reddish-piceous; a black ring at the apex of the femora and tibiæ; spinose hairs few, short and black.



Superior abdominal appendages fully as long as the terminal and penultimate segments together, reddish, but darker (sometimes blackish) at the tips; irregularly oblong, broad, the superior margin elevated into an angle at the extreme base, but afterwards excised to the apex, which is very obtuse and nearly truncate, the inferior margin gradually rounded and dilated; exteriorly the edges are thickened, and there is a slight keel from base to apex parallel with the upper edge; interiorly the appendages are concave, the edges equally thickened, and there is a broad triangular inner tooth above the most dilated portion of the lower edge. Penis reddish-testaceous, recurved in a nearly semicircular manner, flattened, with a median longitudinal sulcus. Internally, between the superior appendages, is a short straight hairy process, gradually dilated to the very obliquely truncate apex. On each side, immediately above the inferior appendage, is a short, straight, cylindrical, hairy (apparently non-articulate) process.

Wings long and very narrow, scarcely dilated: vitreous (possibly with the slightest tinge in very adult individuals). Pterostigma large, *conspicuously greenish-yellow*. Neuration black (excepting the pterostigmatic vein and its two nervules); apical transverse nervules few.

♀ unknown.

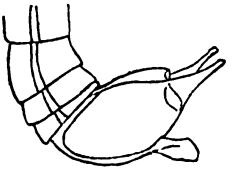
Length of body, 25—26 mm. Expanse, 51—57 mm. Length of anterior wing, 25—28 mm. Greatest breadth of anterior wing, 4—4½ mm. Length of superior appendages, 2¾ mm.

South California. I have examined eight ♂.

This species, which is conspicuous by its pale greenish-yellow pterostigma, has the greatest expanse of wing of all the known North American forms; at the same time the wings are remarkably narrow, and in this differ from all species from the Eastern States. It is a fine addition to the N. American fauna.

PANORPODES OREGONENSIS, *n. sp.*

♂. Very pale yellowish-testaceous, the abdomen (excepting at apex) fuscescent above; ocelli shining blackish; eyes deep black. Antennæ dusky towards the tips. Legs concolorous; the tips of the tibiæ and of the tarsal joints slightly blackish; spinose hairs of tibiæ and tarsi few, short and black; pulvilli large, rounded, black. Maxillary palpi having the 3rd and 4th joints conical, not concave within. *Genæ produced downward into a broad triangular tooth*, on each side of the face below the eyes: mentum with a slight triangular tooth on each side.



Cheliferous segment oval, yellowish; claws short and stout, testaceous at the tips. Appendages, viewed laterally, prominent, thickened and out-turned at the tips: viewed in front they consist of a long band-like piece, slightly dilated at the apex, which is provided with two out-turned slightly foliaceous branches (the true appendages), the whole structure scarcely extending to the base of the claws. The whole segment is finely pubescent.

Wings wholly very pale shining flavescent, transparent, without markings, the pterostigmatical region slightly darker: neuration very pale, the transverse nervules conspicuously whitish if the wings be held against the light: sub-costa terminating about the middle of the costa (before the pterostigma) in both pairs.

♀ unknown.

Length of body, 7—8 mm. Expanse, 20—24 mm.

Mt. Hood, Northern Oregon. I have nine ♂ before me.

The genus *Panorpodes* was established by me in the Trans. Ent. Soc. Lond., 1875, p. 188, for an insect (*P. paradoxa*) from Japan, which, while possessing the general form of *Panorpa*, differs in the rostrum being short and triangular, and in the penultimate and ante-penultimate abdominal segments in the ♂ not being modified and elongate, but narrow and of the form of the ordinary segments, the cheliferous segment closely sessile; also in the form of the maxillary palpi, simple tarsal claws, and unicolorous pale wings.

The interesting little North American insect above described possesses so many points in common with that from Japan, that, for the present, it may be located in the same genus; there is a striking similarity in colour in the two species. The following structural discrepancies exist:—

1. The sub-costa in *P. paradoxa* extends into the pterostigmatic region in the anterior-wings. (This may certainly be considered of specific importance only).
2. The rostrum in *P. paradoxa* is longer than in *P. oregonensis* (hence the latter is still more divergent from the ordinary condition in *Panorpa*).

3. The maxillary palpi in *P. paradoxa* have the 3rd and 4th joints much dilated, and concave within (as if collapsed), instead of cylindrically conical.
4. There is no trace in *P. paradoxa* (nor in any other species of the Family known to me) of the triangular production of the genæ seen in *P. oregonensis* (on the other hand, the teeth on the mentum of *P. paradoxa*, ♂.* are very large, although not noticed in my original description).

On these points it may ultimately be considered necessary to transfer *P. oregonensis* to a distinct genus.

The figure represents the apex of the abdomen of the ♂ of *P. oregonensis* viewed from the side.

N.B.—Although the true genus *Panorpa* is so abundantly represented in the eastern United States, I have never seen a specimen from west of the Rocky Mountains, and know not if any exist in American collections.

Lewisham, London: *May*, 1881.

Lepidoptera at Barnwell Wold.—The first few days of the present month I spent, in company with the Rev. T. W. Daltry, M.A., of Madeley, collecting in that once famous locality, Barnwell Wold. We were not very successful, for, although the weather was everything we could desire, insects, or rather good species, were not numerous. Probably we were a week or two too early. The sloe bushes produced larvæ of *Thecla betulæ* in tolerable numbers, but rather small; and full-fed ones of *Thecla pruni* were not scarce the first day or two, but could not be found on our last attempt at beating for them. Other larvæ included *Trichiura cratægi*, *Pœcilocampa populi* not uncommon on oak trunks, *Eriogaster lanestris*, *Diloba cœruleocephala*, *Himera pennaria*, *Agriopis aprilina*, *Amphipyra pyramidea*, &c., &c.; whilst both larvæ and pupæ of *Pterophorus galactodactylus* were plentiful on the under-side of the burdock leaves. Of imagos *Nemeobius Lucina* was very common flying about hawthorn blossom, &c., and some seven or eight other species of the commoner butterflies also occurred. We searched for, but saw nothing of *Hesperia Paniscus*, probably it was not yet out. And we were of course too early for *Lycæna Arion*, even if it could still be found in its old locality, but Mr. John Bright an old collector with whom we were staying, seemed to have little hope it would ever again turn up in Barnwell Wold, although formerly he took it there in large numbers. *Chærocampa elpenor* occurred about the sugared trees, *Nola cristulalis* on oak trunks, *Corycia temerata* in abundance and in beautiful condition by beating, along with *Ligdia adustata*, *Emmelesia albulata*, *Eupithecia exiguata*, *Melanthia albicillata*, *Coremia ferrugata*, *Cidaria corylata* and *russata* (both species plentiful and variable), *Cidaria silaceata*, *Anaitis plagiata*, *Herminia grisealis*, and *Botys lancealis* in greater or less numbers. Mr. Daltry too, netted a very beautiful variety of *Lomaspilis marginata*. Of *Noctuæ*, the little *Heliodes arbuti* flew very freely in the sun, and *Euclidia mi* and *glyphica* were also common. At sugar *Aplecta herbida* in fine condition was getting well out, though the date was rather early for it; *Noctua c-nigrum*, *Apamea unanimis*, *Thyatira batis* and other common species, but nothing of any rarity was taken.—Geo. T. Porritt, Highroyd House, Huddersfield: *June 9th*, 1881.

Abundance of larvæ of Charæas graminis.—We observe from a local paper that great commotion prevails in Clitheroe, and the district surrounding the famous Pendle Hill, in consequence of the arrival of a large quantity of caterpillars, which occupy the land from Wiswell to Mearley, near Pendle Hill, a distance of about three miles. They travel together in thousands at a good speed, and devastate the land over which they pass to an alarming extent. The inmates of a roadside inn are kept continually at work brushing them out of the house. The road is almost black with the larvæ, whose advent is considered mysterious, numbers of people continually going to view them, and numbers of larvæ being exhibited in shop windows. The caterpillars seem also to be abundant on some of the adjoining moors. We have seen specimens, and find that they are the larvæ of *Charæas graminis*, the well known "Antler" moth, which was very abundant last year in Tatton Park, Knutsford. Their ravages in Sweden and our own Lake district have often been recorded.—Eds.

Eupithecia consignata at Box Hill.—I was somewhat surprised to take at Box Hill, on the 25th May, a specimen of *Eupithecia consignata*, which I disturbed from some bushes near the Burford Bridge Inn. The specimen is a ♀, and has laid a few eggs. I am induced to send this notice, as so few localities appear to be known for this species.—A. H. Jones, Shrublands, Eltham: *June 10th*, 1881.

Notes on the genus Eustra in Japan.—Of the curious Family *Ozænina*, there is only one species recorded from Japan, and in this one Mr. Bates was much interested when writing his first memoir on the *Geodephaga* of these islands. I met with it again yesterday, and a record of its habits may increase the interest regarding it.

This little beetle hibernates under flattish stones, 14 or 18 inches in diameter, choosing those for its retreat which are partially embedded in the soil, and well hidden away in the shelter of shady thickets. It is never found under loose stones, nor under those out in the open, exposed to the rays of the sun. *Eustra* is gregarious, associating in little groups of three, five, or eight, and, when the stone is overturned, the insects are found close together, adhering to the surface of it, never on the earth. Their mode of running and habit of life remind one of *Crepidogaster* or one of the crepitating *Carabidæ*; but anatomists who study the group place them far away from the *Brachyininæ*. *Eustra plagiata*, Schmidt-Goebel, occurs in Burma, and Mr. Bates, after a careful reading of the description, refers the present species to it; but I should very much like to place Japanese specimens side by side with an Indian type for comparison, and will gladly send examples to any Entomologist who could thus identify them. Can any one tell me where the type specimen is? I have written here that *Eustra* "hibernates," but during the last two weeks I have taken many *Geodephaga*, including *Carabus Dehaani*, under stones loose on the surface of the soil, for hibernation here is very different to hibernation in Yokohama, where the severe winter drives everything deep into the earth. Nagasaki is protected on all sides by hills, and is perhaps the warmest nook in all Kiushiu, and during the last ten days I have taken *Adoretus*, *Chalcophora* and *Mesosa* clinging to a species of *Celtis*, and this morning a man brought me a dozen fine fresh specimens of *Batocera* in a basket. Here *Ophionea cyanocephala* is abundant, but nowhere else have I seen it in Japan, and other subtropical species are also confined to this district, and I do not wonder in finding *Eustra* associated with them; but it would be a matter of surprise if it occurred in the north, where the winter is long and severe. It was April before I obtained a specimen of *Carabus* in Yokohama.—GEORGE LEWIS, Nagasaki: *26th February*, 1881.

Coleoptera, &c., near Hastings.—On the 27th May last, I was fortunate enough to meet with a specimen of *Anthribus albinus* in a sand pit here. A few days before this I had picked up a specimen of *Cænopsis fissirostris* in another sand pit. In the latter pit we have found, at various times, plenty of *Pselaphus Heisii*, *Bryaxis fossulata*, *Cytilus varius*, *Orobites cyaneus*, *Lasia globosa*, &c., and occasional specimens of *Pristonychus subcyaneus*, *Cychrus rostratus*, *Trox scaber*, *Plinthus caliginosus*, *Tanymechus palliatus*, *Chrysomela staphylea*, *C. didymata*, &c. Of *Hemiptera*, we have found there abundance of *Sehirus biguttatus*, a few *Aradus depressus*, and an occasional specimen of *Podops inunctus* and *Aneurus lævis*, and last, but not least, the two specimens of *Bothynotus pilosus* already recorded.—E. N. BLOMFIELD, Guestling Rectory: *June*, 1881.

Notes on Coleoptera taken near Hastings.—Last September, I took on a mud-flat at Darvel's Hole, near Battle, a *Tachyusa* I could not make out. I sent it to Dr. Power, who has kindly examined it and determined it to be *T. coarctata*, a species introduced by him as British; and he thus remarks upon it: "*Tachyusa coarctata* is most interesting to me, for I imagined that two in my collection were its sole representatives."

I have several times taken *Notiophilus quadripunctatus* under *Calluna*; there seems to be much irregularity in the position of the four punctures from which it takes its name. These are in some specimens much farther apart than in others, and even in the same insect their position is sometimes different on the two sides, while one specimen I have has a point altogether deficient on one side.

At Battle I have lately taken *Conipora orbiculata* by sweeping, and *Euplectus nanus* with *Phlœocharis subtilissima* in dead oak twigs; and at Hollington *Scydmænus denticornis* in moss. From Battle some of my pupils have brought in several specimens of *Anchomenus livens*. Several collections made in this neighbourhood have recently passed through my hands; they contained, amongst other things, *Euryporus picipes* and *Acidota cruentata* taken by Mr. S. Hume, and *Ocypus fuscatus* and *Megacronus cingulatus* by Mr. W. Bennett.—E. A. BUTLER, Hastings: *June 13th*, 1881.

Cicada montana.—A specimen of *Cicada montana* has been recently taken in

The Hemiptera of Finland.—In the "Meddel. af Soc. pro Fauna et Flora fennica," 7, 1881, pp. 1—109, under the title "Enumeratio Hemipterorum Gymnoceratorum Fenniæ," Dr. John Sahlberg has a List of the *Hemiptera Gymnocerata* of Finland, which, primarily interesting in that country on account of the localities in which the insects have been found there, is of wider importance as showing the prevalence so far of species otherwise known in Europe, and affording means of learning their geographical and climatal range. Especially useful, therefore, is the following summary, derived from recent sources, of the number of species of *Gymnocerata* inhabiting certain regions of Europe.

Finland	360 species	Britain	390 species
Sweden	350 "	Alsace and Lorraine	492 "
Norway	185 "	Belgium	337 "
Denmark	280 "	To which may be added, *sec.* Snellen van Vollenhoven	
Livonia	304 "		
Moscow Govt.	213 "	Holland	263 species

These numbers are not absolute, because in each region other species will doubtless be yet discovered, and some of the reputed species may possibly merge into varieties, but yet the totals are sufficiently approximate to reality to enable comparison to be made. As between Finland and Britain the greater part of the species are identical, but each country has some not found in the other; for example, Finland, with an apparently less total than Britain, has 15 species of *Aradus*, while Britain has but 4. One new species is described, *Salda lapponica*, allied to *S. c-album*, Fieb., and *S. palustris*, Doug. I note some of the more striking items in the paper.

As to the nomenclature of genera:—*Kleidocerus* is retained although the genus was not characterized under this name. *Acalypta*, which has been incorrectly revived by some, is again deposed in favour of *Orthostira*. *Apocremnus*, merged into *Psallus* by Reuter, is again separated. *Halticus* is retained notwithstanding the prior use of *Haltica*. *Microphysa* is adopted instead of *Zygonotus*, although the characters of the former are derived from the ♀ only and do not at all apply to the ♂, while the latter includes the characters of both sexes. *Cryptostemma*, a preoccupied name, is revived instead of *Dipsocoris*.

As to the species:—The name *Scolopostethus ericetorum*, Leth., is resumed *vice S. decoratus*, Reut. *S. pilosus*, Reut., is put as = *S. affinis*, Fieb., Thoms. *Salda fucicola*, J. Sahlb., and *S. pilosella*, Thoms., are retained as distinct species. *S. c-album* is maintained *vice* the older name *stellata*, Curt., and *S. vestita*, Doug. (following Reuter), is given as the macropterous form of that species.

In a previous part of the same journal (5, 1880), Dr. O. M. Reuter gives a list of the *Hemiptera* of the regions of Åbo and Åland only, the *Gymnocerata* numbering 135 species (pp. 160—193). *Sehirus luctuosus*, Muls. and Rey, is enumerated as = *morio*, Fall., Fab., Sahlb., *nec*. Linn.: this should be a hint to us to see if our *morio* be the true species, or if we have both of them in Britain.* Under some genera useful critical remarks and diagnostic comparative characters of species are given, in the author's usual lucid manner. Then follows a list of the *Homoptera*, 133 species (pp. 194—236), including some that are new. This paper, as well as that of Dr. Sahlberg, is especially deserving of the attention of British Hemipterists, the fauna of Finland and Britain being very similar.

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* The differential characters of *Sehirus luctuosus* are thus given by Mulsant and Rey ("Punaises de France, Pentatomides," p. 54, 1866). "*S. luctuosus*, often confounded with *S. morio*, is distinguished from it by its smaller size; its anterior tibiæ armed with only 9—11 spines on the anterior edge, up to the exterior half of the anterior margin (in *morio* 11—13); the anterior margin of each side of the prosternum generally more constantly and sensibly raised and arcuate in its inner half; the pronotum punctured almost as strongly on the posterior portion as on the rest of its surface; the thighs more angular at the extremity; the membrane of the elytra

It is a matter of regret that in both these articles, as also in other works of greater extent treating of different orders of insects, and by other modern authors, the faulty orthography of many generic names is retained. Here, among many others similar, is *Eusarcoris* for *Eusarcocoris; Temnostethus* for *Tmetostethus; Piezostethus* for *Piestostethus* (both very bad examples of derivation); and names into which, as a compound, the Greek word SOMA enters, which are mostly (not always) made neuter if the termination be in SOMA, yet (rightly) masculine if it be in SOMUS. The same remark applies to names into the composition of which DEMAS enters, the terminal DEMA being deemed to make the compound word neuter, but if it be DEMUS then masculine. But I refer to the conclusive remarks on this subject, by a classical authority, in the Ent. Mo. Mag., vol. iv, pp. 259 and 280. The perpetuation of such and other irregularities, to call them by a mild designation, gives force to the reproach of a philologist once addressed to an entomologist:—"You naturalists coin most extraordinary names, sometimes by mere fanciful invention, involution, or anagram, and yet you treat the results, which belong to no language, as if they were Latin; and sometimes, when you profess to derive them from the Greek, you so mangle or misuse the words that your results indicate in their authors a want of full perception of the principles or rules of the Greek and Latin languages; and in preserving the erroneous concoctions you show a blind conservatism." Some of these names are incurable and I suppose must be endured, but others might be easily amended by general consent and practice. Gemminger and Harold, in their works, have set an excellent example in correcting the orthography of generic names of *Coleoptera*.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: 18*th April*, 1881.

Notes on Spring Hymenoptera in 1881.—Although the Aculeate *Hymenoptera* have been generally scarce this spring, I have obtained 2 species which I think are worthy of notice. The 1st, *Andrena lapponica*, I was fortunate enough to meet with near Hastings, in April, and secured a few specimens of the ♀, all flying at sallow blossoms, and so like *Trimmerana*, as to be difficult to distinguish from it until examined at home. The sculpture of the anal segment above is a good character, in *Trimmerana* it is simply punctured, in *lapponica* the centre is triangularly raised. I was also pleased to see in the collection of Mr. F. Collett, of St. Leonards, the ♀ of *Andrena fasciata*, Wesmael, generally known on the Continent by the name of *extricata*, Smith; this name has been given to it in error, as Smith's *extricata* is simply *fulvicrus* faded, and he did not know the true *fasciata*,

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smoky-white, that is, more or less sooty (couleur de suie); the postepisternum marked near the odorific regions with a score of points, partly disposed in two irregular rows" (in *morio* 14 in one irregular row). It is further said that "the colour of the antennæ varies; sometimes the 1st joint is partially or wholly of the same colour as the 2nd (fauve), and often the base of the 3rd and 4th are testaceous red (roux fauve)." The distinguishing characteristics indicated are slight and have mostly an element of "more or less," yet they may be sufficient to constitute a distinct

Wesm., as a British species. I have had ♂ specimens of this very distinct species in my collection for some time, but did not bring them forward till I could get the ♀ also. Mr. F. Collett kindly took me to the spot where he had taken the insects, and I had the pleasure of taking a ♂ and a ♀ myself within 2 or 3 yards of each other. I hope in a coming No. to describe this addition to our list. It appears in April at the same time as *fulvicrus*. I have also received several males from Canterbury, taken by my brother this spring, but he failed to obtain the ♀, and I took a ♂ at Tunbridge Wells myself, in 1877. The white hairs of the face in both sexes distinguish it from *fulvicrus*.—EDWARD SAUNDERS, Holmesdale, Upper Tooting: *9th June*, 1881.

Hypopus parasitic on Ants.—On April 16th, I discovered a curious Acarus parasitic on the abdomen and antennæ of *Myrmica ruginodis*. The Ants had made a small nest under the dry excreta of a cow, in a meadow about three miles from Exeter; through the kindness of Mr. McLachlan specimens of the Ants with the Acarus attached have been submitted to Mr. A. D. Michael, who says that the life-history is not known, and that the form in which we know it is but a stage in its life, but what stage is a very doubtful matter; he says that he is trying to clear it up, but it is extremely difficult, the probability is that it is only parasitic in the hypopial stage, and it is more than probable that it is not confined to Ants.

He says also that these minute creatures are amply provided with suckers on their ventral surface by which they adhere to the most polished chitinous surfaces, and they lay hold of any insect of a suitable nature which passes them.

The *Hypopus* is covered with a kind of carapace which is somewhat truncated in front, the posterior portion being drawn out into a tail-like process, something after the manner of the carapace of the king-crab *(Limulus)*. Under the lens it has a shining pearly lustre, tinged with purple. Should any Hymenopterist meet with any of these *Hypopi*, they would, I have no doubt, prove very acceptable to Mr. Michael in clearing up the history of this curious creature.—EDWARD PARFITT, Exeter: *June*, 1881.

The generic term Degeeria.—My note appended to Mr. Meade's remarks on the double use of the term *Degeeria*, published in the last No. of this Magazine (p. 19), conveys a false impression. Rondani proposed the term *Entomobrya* for Nicolet's genus *Degeeria*, not for Meigen's. At first I rightly construed his meaning, but upon referring to Marschall's "Nomenclator Zoologicus" (1873), found *Entomobrya* placed there amongst the *Diptera*. Those, therefore, who consider that Nicolet's term *Degeeria* cannot remain in use, should employ *Entomobrya*. It would have been better, however, if Rondani had simply called attention to the prior existence of "*Degeeria*" amongst the *Diptera*, leaving it to some worker at *Thysanura* to suggest another name for Nicolet's genus.—R. McLACHLAN, Lewisham: *June*, 1881.

Obituary.

Baron Maximilien de Chaudoir, the eminent Coleopterist, so widely known for his numerous works on the *Geodephaga*, to the study of which he exclusively devoted himself, died on the 6th May last, at the age of 64. His family estates were at

Jitomir, near Kieff, in the Russian province of Volhynia, and, from an allusion which he makes in one of his early papers to a three years' residence in his youth at Dorpat, we conclude that his education was completed at the University of that place. His first paper, published in the Annales de la Société Entomologique de France in 1835, was written in Dorpat, where he appears to have received some stimulus in his special studies from the inspection of the collection of Eschscholtz, who had recently died. To the first paper just mentioned quickly followed others, published in the "Bulletin de la Société Impériale des Naturalistes de Moscou." The first contribution to the Moscou Bulletin which we are able to trace, appeared in 1837, and from that date there is scarcely a volume for upwards of forty years, which does not contain a paper from his pen. He was also a frequent contributor to the "Zeitschrift" of the Entomological Society of Berlin, in which he sometimes wrote in German; to the "Annales" of the Belgian Entomological Society, as well as the French; to the "Annali del Museo Civico de Genova;" the "Revue et Magazin de Zoologie;" and other publications. In 1844 or 1845, he undertook an Entomological excursion to the Caucasus, taking the Crimea on his way; the result of which he gave to the world in one of his very few independent works, entitled "Enumération des *Carabiques* et *Hydrocanthares* du Caucase," printed and published at Kieff in 1846. The *Hydrocanthares* (*Dytiscidæ*) of the work were catalogued and described by Hochhuth, M. de Chaudoir having never, in his long career, permitted his attention to be diverted from the group of *Coleoptera* to which he became attached in the days of his boyhood. A second independent work was his "Catalogue de la Collection de Cicindélètes de M. le Baron de Chaudoir," published at Brussels in 1865. We are not acquainted with any other, but the *separata* of many of his more important monographs, published in the Transactions of Societies, were issued as separate volumes, and placed in the hands of booksellers for the benefit of the Entomological public. Such were the "Monographie des Callidides" (204 pp.); the "Mémoires sur les Thyréoptérides et les Coptodérides" (256 pp.); the "Monographie des Chléniens" (315 pp.); and others. During the later years of his life, he spent much of his time in Western Europe, and finally took up his residence with his family at Amélie les Bains, in the Pyrenees, where he died. He several times visited England, and, on one occasion, spent many weeks in London, studying the *Collyridæ* of the British Museum collection, in preparation for the elaborate Monographic Revision of that Family, which he published in Paris in 1864.

He was also a frequent visitor to the French Capital, where the chief part of his magnificent collection of *Geodephaga* was kept for many years, in the house of his life-long friend, M. Auguste Sallé, No. 13, Rue Guy-de-la-Brosse. The collection had a narrow escape in the winter of 1870—71, a shell from a Prussian battery having exploded in the back yard after traversing the building obliquely from the roof to the first floor. For the number of its type specimens, and probably of its species, this collection was by far the most important of this group which had ever been brought together. It contained the great collection of the Count Dejean, augmented by the Marquis de la Ferté during the thirty years it remained in the hands of the latter, with the types of the "Spécies Générale" of Dejean, the years of unflagging devotion to the pursuit. Before he died, he disposed of these accumulated treasures, ceding the *Cicindelidæ* to the Museum of the Jardin des Plantes, and the *Carabidæ* to M. René Oberthur.

M. de Chaudoir never pretended to be more than a systematist and describer, and it would perhaps be unjust to complain that his voluminous works contain no trace of broader views of biological science. His truly wonderful powers of minute analysis of forms were directed simply to the more accurate discrimination of genera and species for—the naming of collections. As a natural consequence, his genera and groups were always more or less artificial, though well adapted for their purpose; and his descriptions, when he thought necessary to describe fully, were models of clearness and precision. His relations with other Entomologists were always courteous and friendly, and he never indulged in controversial writing, however great the provocation.

John Blackwall, F.L.S., who died on the 11th May last, was born in 1789 (according to Hagen, 1790). His earliest scientific communications gave no indications of the subject which was to be his life's study.

Sixty years ago when residing at Crumpsall, near Manchester, he published, in Thomson's Annals of Philosophy, some Meteorological Observations in reference to the diurnal mean temperature, and the following year some notes on Migratory Birds, near Manchester, appeared in the Memoirs of the Manchester Philosophical Society, this was followed by Observations on the Notes of Birds, indeed, 15 of his first 25 papers related to Ornithology.

His earliest paper on Spiders appeared in 1827, in the Transactions of the Linnean Society, of which he was elected a Fellow in April, 1827; it is entitled "Observations and experiments made with a view to ascertain the means by which the Spiders that produce Gossamer effect their aërial excursions," and, in 1830, he published a notice in the Zoological Journal, "On the manner in which the Geometric Spiders construct their Nets." Indeed, of his second 25 papers, 18 are devoted to Spiders, only 3 to Ornithology, 2 to Ichthyology, and 2 to Entomological Subjects. Most of his papers were published in a collective form in 1834, under the title of "Researches in Zoology," a second edition of which appeared in 1873, and was noticed in this Magazine, vol. x, p. 142.

We believe it was in 1842 that he settled at Llanrwst, where he lived the remainder of his days.

John Blackwall's great work was "A History of the Spiders of Great Britain and Ireland," issued by the Ray Society in two parts in 1861 and 1864, this extends to 384 pp. large quarto, and is illustrated by 29 coloured plates. Mr. Blackwall himself contributed most liberally to the expense of the coloured plates.

The last thirty of Mr. Blackwall's separate papers were entirely devoted to Spiders. One feature in Mr. Blackwall's communications for the press is deserving of special comment, he wrote a hand which was truly "as clear as copper-plate," and that which he wrote was destined to appear in print, and his proof-sheets were returned to the printers with scarcely a single alteration, the charge for "corrections" in his case was certainly reduced to a minimum. It is a great pity that such a good example is not more generally followed.

SOME NEW SPECIES AND GENERA OF *COLEOPTERA* FROM NEW ZEALAND.

BY D. SHARP, M.B.

Mr. Richard Helms, of Greymouth, New Zealand, has sent to me recently a small parcel of *Coleoptera*, containing a few interesting novelties. Of these I have selected three or four as specially suited to be made known by means of isolated descriptions, and I have added to these descriptions two others introducing fresh genera to the New Zealand fauna. These forms are:—1. *Anchomenus Helmsi, n. sp.* (*Carabidæ*); 2. *Necrophilus prolongatus, n. sp.* (*Silphidæ*); 3. *Zeatyrus* (*nov. gen.*) *Lawsoni, n. sp.* (*Pselaphidæ*); 4. *Lissotes Helmsi, n. sp.* (*Lucanidæ*); 5. *Chrosis violacea, n. sp.*, and 6. *Protelater nigricans, n. sp.* (*Elateridæ*); 7. *Scaphodius compactus, n. sp.* (*Chrysomelidæ*).

Necrophilus, *Zeatyrus*, and *Scaphodius* have not before been recorded from New Zealand; the occurrence of the first of these genera there is very remarkable, as the species composing it have hitherto been found only in the northern parts of the Northern Hemisphere (Europe, Siberia, North America). On carefully comparing the New Zealand species with two of the Old World species, I have been unable to detect any character of generic distinction, although the New Zealand species is abundantly distinct in specific characters; this induced me to suppose that the New Zealand species might be one introduced there by some accidental means, but on further examination this has appeared in the highest degree improbable.

Mr. Helms's location on the West Coast of New Zealand, renders his collections of much interest, nearly everything hitherto described in the way of New Zealand beetles being from the countries to the east of the New Zealand Alps. A considerable portion of Mr. Helms's captures have been found to be new species and genera, and a paper has already been published on them by Herr Reitter,* of Vienna. Mr. Helms is placed in a very interesting country, and one that, judging from his discoveries, is favourable for beetles, and he seems also to be a very skilful collector, not merely one who picks up such things as insist on being caught by running about the roads or paths where the collector may happen to be walking. Judging from Herr Reitter's list, Mr. Helms's discoveries in *Colydiidæ* and *Pselaphidæ* are especially numerous, and all beetle-collectors know these are just the severance. There are good reasons to believe that the natural fauna of the Antipodes, more especially of New Zealand, is rapidly, like its native population, going to extinction, and yet, on a knowledge of its nature, there are dependent a large number of most difficult and important scientific questions. In these countries, men, therefore, who will at present collect well, and take proper steps for the preservation of what they collect, are really very valuable, and deserve the encouragement of their fellows.

ANCHOMENUS HELMSI, *n. sp.*

Sat elongatus, parum nitidus, nigro-piceus, antennis, palpis pedibusque rufo-testaceis; prothorace parvo, lateribus postice fortiter sinuatis, angulis posterioribus rectis, basi utrinque profunde impresso; elytris sat convexis, lateribus valde curvatis, profunde striatis, prope apicem fortiter sinuatis.
Long. 11, *lat.* 4 *mm.*

Similar in appearance, and more particularly in colour, to *A. otagoensis*, Bates, but abundantly distinct, rather smaller, the upper surface less opaque and not so flat, the thorax shining, the elytra deeply striate. The thorax is much rounded at the sides, and much constricted behind, the posterior part of the sides is quite straight, and the hind angles are abruptly marked, and quite rectangular; the surface is not flat, but is deeply impressed on each side at the base; the mesial longitudinal channel is very distinct. Elytra rather short, the sides and shoulders much curved; the striæ deep, but not punctate: the interstices are broad and but little convex, the three punctures on the third moderately distinct. There is but little difference between the male and female, even the front tarsi of the former being but little dilated.

Greymouth, No. 6, Helms.

NECROPHILUS PROLONGATUS, *n. sp.*

Niger, nitidus, lævigatus, antennarum basi rufescente, prothoracis lateribus late testaceis; elytris ad apicem attenuatis, ultra abdominis apicem prolongatis, subtiliter striatis, striis in partem prolongatam profundioribus et fortiter punctatis. *Long.* 10, *lat.* 4$\frac{3}{4}$ *mm.*

Antennæ with the basal five joints piceo-rufous, slender, and shining, the apical five abruptly broader than the others, fuscous-black, densely pubescent and opaque; head closely and finely punctured, even in front; the clypeal suture indistinct, angulate in the middle. Thorax rather strongly transverse, the front angles extremely rounded off and indistinct, and not projecting farther forwards than the middle of the front margin; the disc sparingly and obsoletely punctured, the explanate yellow sides more distinctly punctured. Elytra rather narrow and elongate, with their apices prolonged, and the prolonged portion abruptly bent down; they are rather finely striate, but the interstices are somewhat convex, and the 7th is elevated at the shoulder; the striæ are provided with fine, distant impressions or punctures;

on the apical, and more especially on the lateral-apical, portion the sculpture becomes deeper and coarser, so that the outer stria bears some very large, deep, impressions. On the under-surface it is seen that this apical portion of the wing-cases projects quite beyond the hind-body. The two individuals described are females.

The species appears structurally very similar to the European and North American species of *Necrophilus*, and the peculiar form and sculpture of the wing-cases would not at present justify its being treated as a distinct genus.

Greymouth, No. 57, Helms.

ZEATYRUS (*n. g.*) LAWSONI, *n. sp.*

Convexus, rufescens, nitidus, parcius pubescens, fere impunctatus; prothorace sub-globoso; elytris brevibus, pallide rufis. *Long.* 1⅔ *mm.*

Antennæ rather stout, first joint longer than broad, slightly longer than the following ones, 2nd and 3rd sub-equal in length, the latter more slender than the former, 4—8 differing but little from one another, the first of them rather longer than broad, the last rather broader than long, 9th joint much broader than the 8th, transverse, 10th strongly transverse, 11th large, rather broader than the 10th, and three times as long as it. Head shining, impunctate, with a fovea behind each of the large frontal tubercles. Thorax sub-globose, almost impunctate, destitute of foveæ. Elytra short, but little longer than the thorax, much narrowed towards the shoulders, convex or inflated, of a paler red than the rest of the surface, sparingly and very obsoletely punctured, without sutural stria. Hind-body greatly deflexed, strongly margined at the sides; legs elongate.

A single specimen of this species was found by Mr. Lawson at Auckland some years ago.

This insect must form a new genus in the family *Pselaphidæ*, the characters of which I give below.

Antennæ stout, inserted in two cavities on the front of the head, near, but distinctly separated from, one another; front with two approximate but distinctly separated tubercles over the antennal insertion. Maxillary palpi rather elongate, the 2nd joint somewhat elongate, curved or emarginate in front, angularly dilated behind, and furnished with an elongate seta on the prominent angle; 3rd joint quite small, about as long as broad, 4th joint excessively dilated, so as to form a large knob, with a minute tubercle or angle on its front edge internally. Metasternum very short; middle trochanters elongate; claws of the tarsi two, quite distinct.

The genus should be placed next to *Tyrus*, from which its

LISSOTES HELMSI, *n. sp.*

Niger, opacus, prothoracis elytrorumque marginibus squamosis; capite prothoraceque crebre punctatis, hoc lateribus rotundatis, margine anteriore leviter bisinuato, angulis posterioribus omnino latissime rotundatis; elytris sat crebre punctatis, seriebus quatuor squamorum brevium erectorum.

Long. corp. (sine mandibulis), 20 *mm., lat.* 10 *mm.*, ♂.

Head with numerous punctures on the upper surface, which, on the extreme vertex, become almost dense: the hind angles slightly prominent but without any distinct projection. Prothorax very strongly transverse, with very numerous, rather fine, punctures; its front has a slight but distinct margin, which becomes obsolete in the middle, the sides are a little curved, and the hind angles are very broadly rounded; side margins very densely covered with very short fulvous setæ, or scales. Elytra short and broad, dull, with four longitudinal series of closely-packed, erect, very short fulvous setæ, and with the strongly raised side-margins very densely covered with similar setæ, the surface between the series very distinctly punctured. The upper-inner face of the hind tibiæ is distinctly longitudinally sulcate; the apical spurs are broad.

The male has the mandibles short and stout, strongly curved, with a short basal tooth, which overlaps the labrum, and a very large tooth in the middle, which, when the mandibles are closed, meets that of the opposite mandible, just in front of, but below, the labrum. The female is unknown.

Found at Greymouth, West Coast of New Zealand, by Mr. Helms; in recognition of whose successful researches I have named the species.

This species is allied to *Lissotes capito*, Deyr. and Parry, from the Chatham Islands, but is abundantly distinct, by the form of the thorax, the series of setæ on the elytra, the punctured head and prothorax, distinctly sulcate hind tibiæ, and other less important characters; there is not, I believe, any species at all similar to it known as occurring in New Zealand.

CHROSIS VIOLACEA, *n. sp.*

Elongata, versus apicem attenuata, sat nitida, nigra, supra violacea; prothoracis lateribus pone angulos anteriores angulariter prominulis.

Long. 12—15, *lat.* $3\frac{3}{4}$ *mm.*

Antennæ deep black, just as long as head and thorax. Thorax elongate, of peculiar form, the sides commencing at the front angles as if they were going to be a good deal rounded and directed outwards, but very shortly becoming all at once a little narrower, and parallel with one another, so that a small conspicuous prominence is formed on each side near the front, the hind angles gradually but strongly directed outwards; the sides are densely and rather coarsely punctured, the middle smooth and nearly shining, the surface bears a very short and fine upright black pubescence. Elytra strongly narrowed towards the extremity, distinctly striate, the striæ rather strongly punctate, the interstices moderately closely and finely punctate; each wing-case terminates as an acute point, placed at some distance from the suture: undersurface with a fine cinereous pubescence, the last abdominal segment terminating on each side as an acute tooth. The legs are slender, the tarsi particularly slender.

This distinct species will be very readily identified. I think it likely that it may prove to be sufficiently distinct structurally, from the other species of *Chrosis* to form a new genus.

Greymouth, No. 22, Helms.

PROTELATER NIGRICANS, *n. sp.*

Elongatus, angustulus, sub-cylindricus, niger, sparsim tenuiter pubescens, sat nitidus, prothoracis angulis posterioribus picescentibus, abdomine nigro-piceo, lateribus rufis. *Long.* 11, *lat.* 2¾—2⅞ *mm.*

This species is the largest *Protelater* yet discovered, and may thus be easily identified also by its black colour, comparatively shining surface, and scanty pubescence. The thorax is shining, rather sparingly and distinctly punctured, the elongate hind angles are much directed outwards; the elytra are rather deeply striate, the striæ distinctly punctured; the interstices are more finely and sparingly punctured, the 3rd, 5th, and 7th are, beyond the middle, more elevated than the others.

The colour of this species is very probably variable; compared with the large variety of *P. elongatus*, I find that *P. nigricans*, independent of the colour and sculpture, is distinguished by more elongate antennæ, and by the hind angles being more abruptly directed outwards.

Greymouth, No. 59, Helms.

SCAPHODIUS COMPACTUS, *n. sp.*

Minutus, breviter ovalis, convexus, nitidus, niger, antennarum basi orisque partibus testaceis, pedibus anterioribus fusco-testaceis, posterioribus piceis: prothorace subtiliter sparsim punctato; elytris striatis, striis punctatis. *Long.* 1⅝ *mm.*

Labrum, palpi, and basal joints of the antennæ pale yellow, the terminal four joints of the latter deeply infuscate. Prothorax at the base continuous with the elytra, to which it is very closely applied, the sides much narrowed in front, very distinctly margined, its surface very shining, and bearing minute, scanty, somewhat elongate punctures; elytra very distinctly striate, the striæ fine at the base, distinctly punctured, the sutural angles rounded.

Of this peculiar little insect I have seen only one individual in bad condition, which I obtained from the collection of the late Andrew Murray. I believe it may be referred to the genus *Scaphodius*, recently established by Chapuis for the New Caledonian *Cryptocephalus striaticollis*; as, however, that insect is scarcely known to entomologists, and I have not seen it myself, there is considerable doubt whether these two insects will prove to be really congeneric; I think it, there-

Head small, received into, and exactly adapted to, the front of the prothorax. Antennæ short, and rather slender, joints 3—6 small, and so closely applied to one another as to be scarcely distinguishable; joints 7—11 a good deal broader than the preceding ones. Middle of pronotum prolonged behind, and its apex with a small deep notch, adapted to the narrow, small scutellum. The coxæ all very widely separated, the anterior ones very near the front edge of the prosternum. The prosternum is flat along the middle, and the mesosternum is elevated in the middle so as to form a short, very broad process, connected with the prosternum by a quite straight transverse suture, the two parts being so closely applied together as to appear one; this raised portion of the mesosternum is quite continuous in plane with the metasternum, and thus the body along the middle line is very consolidated: the 1st ventral segment is large, the 2nd very short, the sutures between 1st and 2nd, and 2nd and 3rd segments quite straight, the two following sutures strongly arcuate, so that the 3rd segment appears quite divided in the middle, 5th segment large, with a broad shallow impression extending along the middle. Pygidium exposed.

Thornhill, Dumfries:
May, 1881.

NOTES ON THE BRITISH *BYTHOSCOPIDÆ*.

BY JAMES EDWARDS.

The fact that certain species in this group, and more particularly in the genus *Pediopsis*, are not so well defined as could be desired, induces me to offer to the readers of this Magazine the result of my own observations in the form of a synoptical table of all the species at present recorded as British, and notes on some of the more obscure species. My object in so doing is to call attention to these insects, with the view to their being more extensively collected, as it is impossible to form any adequate idea of the limits of a species except by studying a series of examples.

The *Bythoscopidæ* may be easily distinguished from all other British *Homoptera* by the antennæ being inserted between the eyes and the ocelli situate on the frons.

TABLE OF GENERA.

(6) 1. Anterior margin of crown broadly rounded.
(5) 2. Sculpture of pronotum distinct.
(4) 3. Species dirty white, with black or fuscous markings............AGALLIA.
(3) 4. Species green, reddish-testaceous, or bluish-green...............MACROPSIS.
(2) 5. Pronotum not perceptibly sculptured ....IDIOCERUS.
(1) 6. Anterior margin of crown obtusely angular.
(8) 7. Sculpture of thorax transverse.....................................BYTHOSCOPUS.
(7) 8. Sculpture of thorax running obliquely from the central line of thorax to its margin...PEDIOPSIS.

AGALLIA.

(4) 1. Pronotum twice, or nearly twice, as long as the crown. Insects macropterous.
(3) 2. Pronotum faintly punctured .... *puncticeps.*
(2) 3. Pronotum transversely striate .... *venosa.*
(1) 4. Pronotum only slightly longer than the crown. Insect brachypterous .... *brachyptera.*

MACROPSIS.

(2) 1. Elytra pale bluish-green, very finely punctured with black. Length, about 1¾ lines .... *microcephala.*
(1) 2. Elytra bright green (♀) or reddish-testaceous (♂). Length, about 3½ lines .... *lanio.*

IDIOCERUS.

(4) 1. 1st and 2nd apical areas of elytra sub-equal in length, *i. e.*, their bases level, or nearly so.
(3) 2. Cheeks densely white pubescent .... *adustus.*
(2) 3. Cheeks bare .... *lituratus.*
(1) 4. 1st apical area much longer than 2nd.
(6) 5. 1st sub-apical area triangular or 5-sided, reaching the costa *varius.*
(5) 6. 1st sub-apical area parallel-sided, not reaching the costa.
(8) 7. Nerves of elytra chequered with black and white .... *Heydeni.*
(7) 8. Nerves of elytra not chequered.
9. Elytra with a white H on each .... *H-album.*
10. Elytra white, their base, and a broad transverse band in the middle, brown .... *tremulæ.*
11. Elytra with a white transverse band beyond the apex of the clavus .... *laminatus.*
(15) 12. Elytra yellow or greenish-yellow, generally with a reddish-brown tinge.
(14) 13. Side margins of face at most faintly sinuate. Antennal plate in ♂ oval, abrupt .... *populi.*
(13) 14. Side margins of face obtuse angularly indented. Antennal plate in ♂ gradual and very narrow .... *fulgidus.*
(12) 15. Elytra white .... *confusus.*

BYTHOSCOPUS.

(4) 1. Face (seen in profile) somewhat flattened.
(3) 2. Wings fumose in ♂, hyaline with a fumose border in ♀. Genital plate in ♀ semicircularly emarginate .... *alni.*
(2) 3. Wings hyaline, with a fumose border in both sexes. Genital plate in ♀ triangularly emarginate .... *rufusculus.*
(1) 4. Face strongly rounded. Wings as in *alni* .... *flavicollis.*

PEDIOPSIS.

1. Elytra whitish, nerves of corium pale, of membrane dark .... *nanus.*
2. Elytra whitish, nerves of corium and membrane green .... *virescens.*
3. Posterior tibiæ with two short black streaks on the inner side, one near the apex, the other near the base .... *tibialis.*

(9) 6. Nerves not darker than elytra.
(8) 7. Face with five black spots ....*impurus.*
(7) 8. Face with four black spots...................... ....*distinctus.*
(6) 9. Nerves darker than the elytra.
(11) 10. Nerves but little darker than the elytra. Face with very indistinct traces of the short, double, longitudinal, dark line between the two uppermost spots... ....*fuscinervis.*
(10) 11. Nerves black or nearly so.
(13) 12. Nerves of the corium only black. Face without any trace of dark markings between the two uppermost spots ....*nassatus.*
(12) 13. Nerves of corium and membrane black, or nearly so. Face with a distinct double, longitudinal dark line between the two uppermost spots .... *scutellatus.*
(5) 14. Face not distinctly spotted with black.
15. Elytra brownish-testaceous, sprinkled with fuscous atoms. Head and thorax greenish-yellow............................*tiliæ.*
16. Elytra testaceous, with an abbreviated, transverse, dark brown band in the middle .. ..*cereus.*
17. Elytra testaceous, nerves darker, along the costa a narrow dark line ....*ulmi.*

The above tables (which, with one or two exceptions, were drawn with the insects before me) may perhaps be useful in naming any of the species hitherto recorded as occurring in this country; but they are only intended as a key to the detailed descriptions which have, from time to time, appeared in this Magazine, and, like all contrivances of their kind, they must be applied strictly and with great care.

Agallia puncticeps and *venosa* are common, but *brachyptera* is, I believe, only recorded from Scarborough. *Macropsis microcephala* is said to be attached to *Helianthemum*, and is therefore local, but *M. lanio* is common everywhere on oaks.

The determination of the species of *Idiocerus* presents no difficulty, except, perhaps, in the case of *populi* and *fulgidus*. The latter, however, may be separated by the structural characters given above. The difference between the very narrow and gradual antennal plate of ♂ *fulgidus* and the oval abrupt one of *populi*, although not noticed in Kirschbaum's description, is very striking. *I. venustus* I omit on the authority of Mr. Scott, who says that it "may be considered as a variety of *I. varius*." The number of our species, however, remains the same, as I am able to introduce with certainty the genuine *I. varius*, Fab. My experience of the habitats of these beautiful insects is as follows: *adustus* and *lituratus* common, on willow trees; *varius* scarce, on osiers; *Heydeni* and *H-album* on Lombardy poplars; *confusus* on white poplar; *fulgidus* on black poplar; and *populi* on poplars generally.

The species of *Bythoscopus* are common and easily recognised, notwithstanding their extreme variability. *B. alni* occurs on alders, and *rufusculus* on sallow, while *flavicollis* exhibits a marked preference for birch.

The characters of *Pediopsis fuscinervis* and *nassatus* given above are taken from Mr. Douglas' type examples, which he was so good as to lend me; but I fear that they are the characters of individuals rather than of species. The *scutellatus* of my collection agrees with Mr. Douglas' examples of that species, but not so my *nassatus*, which latter is larger and paler than *scutellatus*, with the nerves of the elytra fine, rust-brown, and the two comma-shaped polished spaces on the lower part of the frons are nearly obsolete, the latter structure in *scutellatus* being much larger, well defined, and filled up with black. Whether or not my insect is the *nassatus* of Continental authors, it is impossible to say, without comparing it with authentic specimens, as the evidence to be gathered from the published descriptions is scarcely satisfactory. It is to be observed that Sahlberg says of *nassatus*—"tegminibus obsolete venosis," and he puts *fuscinervis*, Boh., doubtfully, as a variety thereof, chiefly distinguished by having the transverse nerves of the elytra strongly infuscated. Unfortunately, in the *Bythoscopidæ* the genitalia, which in other groups furnish valuable distinctive characters, afford little or no assistance, the differences observable being of the most trifling description.

Notwithstanding the confusion prevailing amongst these species at the present time, there is every reason to believe that the examination of a larger series of examples from various parts of the kingdom, would enable one to define the species we already possess with something like certainty, and it should be remembered, that the chances of meeting with new species are very considerable.

One word as to the collection and preservation of the *Bythoscopidæ*. These insects are in greatest abundance from the middle of August to the middle of November, and the most productive trees are sallows, willows, and poplars; the sweeping net, too, may be used with advantage. M. Lethierry finds certain species on firs in February and March, but I have not been so fortunate. Single examples are certainly best pinned with a fine pin through the *scutellum*, as this admits of an examination of the under-side without further trouble; but if examples are plentiful, they may be gummed on card, either simply or with the elytra and wings spread out, and a few specimens

A NORTH AMERICAN SPECIES OF *DILAR*.

BY R. McLACHLAN, F.R.S., &c.

At p. 39 of Vol. xvii of this Magazine (July, 1880) I described a species of the singular genus *Dilar* from South America. It is now necessary to record the genus as *North* American, Dr. Hagen having just forwarded to me one ♀ example (not in very good condition) taken by Mr. Sanborn at Bee Spring, Kentucky, in June, 1874. The following description is the best I am able to draw up, in the absence of further materials of both sexes, and in better condition.

DILAR AMERICANUS, *n. sp.*

Body whitish, with a faint yellowish tinge, clothed with whitish hairs, with which a few blackish are intermingled. Face yellowish. Eyes metallic-silvery. On the head above are three very large, somewhat closely placed, rounded-oval tubercles. Antennæ concolorous with the body, apparently 17-jointed, the joints short, somewhat moniliform, not toothed internally at the apex, the terminal joint ovate. Legs whitish, with white hairs; the tips of the femora, tibiæ, and tarsi testaceous; claws minute, simple, piceous. Apex of the abdomen forming an elongate pyriform opening, in the middle of which are two large rounded, whitish, finely granulose tubercles (extraneous bodies?): ovipositor longer than the entire body in the dry insect, yellowish-white, semi-transparent, slender, slightly curved. Wings pale whitish-hyaline, each with about twenty rather large greyish spots, some of which, in the apical half of the wing, show a tendency to unite into fasciæ: neuration pale, darker in the spots, hairs long, whitish, but mixed with blackish, especially on the spots; sub-costal area almost without transverse nervules; costal veinlets simple, with faint indications of marginal rudiments between them; principal sector with five branches in both pairs; transverse nervules very few, so that the neuration is remarkably open; a discal horny point between the 1st and 2nd branches of the sector; nearly all the apical and marginal nervures bi- or tri-furcate, with minute marginal rudiments.

♀. Length of body (without ovipositor), about 3 mm.; length of ovipositor, about 3¾ mm. Expanse of wings, about 14 mm.

Viewed in the light of increased information, it is possible that both this and the S. American *D. Prestoni* may eventually be separated generically from the Old World forms; but the materials are yet too few. They are very small in size and pale in colour; the structure of the antennæ in both sexes probably differs slightly; the neuration is much more open, with only few transverse nervules, and there appears to be only one (many-branched) sector of the radius, whereas in the European and Eastern forms there is a simple (forked at the end) sector emitted from the radius before the branched one that runs parallel to it.

Lewisham, London: *June,* 1881.

LIFE HISTORY OF *GELECHIA BRIZELLA.*

BY HENRY MONCREAFF.

When full-fed the larvæ are four lines long, tapering towards each end. Head, and plate on second segment, shining brown; body pale orange-coloured, a large circular blotch of lighter colour covering the dorsal part of the eighth and ninth segments; skin in loose folds along the spiracles, which are pale brown; legs and claspers annulated with dark brown; several stiff hairs on each segment. Pupa light brown, the circular blotch spoken of above showing plainly through the case.

So far back as the year 1873 I became acquainted with this larva. Whilst examining sweepings from off *Statice limonium*, I was somewhat surprised to see many of the flowers apparently erect themselves and walk across the paper. On examination, I found that each was tenanted by a small larva, the head and first pair of legs of which protruded through the small end of its ready-made case, and this led me at first to think that I had discovered a new *Coleophora.*

I secured a number of the larvæ, together with a bunch of the *Statice.* The larvæ fed on the flowers and unripe seeds, and were full fed by the end of October, when they spun together several of the flowers, and formed among them a tough silken cocoon, remaining in this unchanged till May, when they entered the pupa state, the imagines emerging through June and July.

This must be a semi-aquatic species, as at every spring tide the marshes where it occurs, and the plants on which it feeds, are under water. During the winter months the marshes are swept by the high tides, and the dried flower-heads of the *Statice*, with other marsh refuse, form large heaps at the high-water mark, among which the larvæ remain in their water-tight cocoons warm and secure until the time of emergence.

I am sorry to say that the marsh on which this and other species occurred so abundantly has been, for some time, in process of reclamation, and now lies under some feet of harbour-mud, but I hope to find it in another locality.

Stainton, in the Manual, says, "Larvæ in flower-stems of *Statice armeria.*" This plant abounds with us, but I have never found the slightest trace of the larva either in the flowers or stems of that plant. Has any one else?

[illegible]

DESCRIPTION OF THE LARVA OF *ENNYCHIA OCTOMACULALIS*.

BY WILLIAM BUCKLER.

The larva of this species is, barring Ichneumons, easy enough to bring to full growth and to spinning its cocoon for hibernation, but most difficult to prevent from dying afterwards at the critical time when the larva should become a pupa: this at least has been the experience of my friend Mr. Wm. R. Jeffrey, and myself for four years in succession.

Mr. Jeffrey found five or six of the larvæ first on September 19th, 1877, and kindly sent some of his captures to me; at that time the species was of course unknown to us, and our hopes that one or other might rear a moth were entirely foiled by all the larvæ dying within their cocoons before pupation.

In 1878, Mr. Jeffrey found but two larvæ, and these again both died in the same way: in 1879 he found four, and shared them with me; before hibernation we each lost one larva by parasites, and again the unstung examples died in their cocoons.

Nothing daunted by all this failure, Mr. Jeffrey persevered in his search again last year, and on the 18th of August found four of our still *unknown* larvæ, and again, on the 3rd of September, three more in a younger stage than any previously detected; my friend kept for himself but two larvæ, part of the four first found; yet, most fortunately, with one of these he has been successful in solving our puzzle, and on the 2nd of the present month he had the pleasure of breeding a fine female *E. octomaculalis*, and great indeed is the satisfaction this success has given to both of us.

Hitherto as a larva unknown in England, this species is mentioned by Dr. E. Hofmann, in his "Kleinschmetterlingsraupen," as living on and skeletonizing the under-side of the leaf of *Bellidiastrum Michelii;* but he gives no description of the larva itself, nor does he say whether Hartmann, whom he quotes, has described it.

In this country the larva is found in a slight whitish web on the under-side of the lowermost leaves of *Solidago virgaurea*, eating away large portions from them; when only the length of a quarter of an inch it is of a whitish-green tint with greener dorsal line, but after the next moult assumes very much the appearance in all but size of the adult, and again moults before attaining its full dimensions.

When full grown the larva is from five-eighths to nearly three quarters of an inch in length, tapering at both ends, the head somewhat broader near the mouth than at the crown, the segments of the body well cut at the divisions, particularly on the belly where they are very plump, on the back there is a deep sub-dividing wrinkle across the middle of each segment, and an ordinary wrinkle on each sub-division, the ventral legs slender, the anal pair stretched out behind in a line with the body, and the head similarly extended in front.

In colour the head is whity-brown, having a few light brown freckles and black ocelli, the back is broadly of a delicate light opaque cream-colour divided by a narrow dorsal stripe of rich and very deep translucent green, narrowest at each end, and sometimes there shows faintly within a still darker pulsating vessel; the pale cream-colour extends lower down the side of the hinder half than on the front half of each segment, and near the lower margin of this colour is a fine line of translucent yellowish-green, a little interrupted towards the end of some of the middle segments; the space between the light cream-colour and the faintly-showing tracheal thread is of translucent green, broadest on the front half of a segment, below on the anterior segments is a stripe of lighter semi-transparent green, which melts away into the still lighter watery opalescent or greenish tint of the belly and legs; the tubercular slight warty prominences have each a small central dot of transparent green, bearing a fine whity-brown hair; the third and fourth segments have sometimes a minute black lateral dot; the spiracles appear as most minute brownish-black rings; the whole surface of the skin is glossy.

When full-fed the larva turns almost of an uniform yellow, though the back still retains its opacity beneath the glossy skin, and soon it spins for itself, either between the leaves or in an angle of some convenient surface, a whitish semi-opaque silken outer cocoon of strong texture, from three quarters to an inch in length, and within it an inner series of open-wrought threads, forming a kind of loose hammock, in which it passes the winter unchanged.

The cocoon which Mr. Jeffrey sent me to examine is three quarters of an inch long and of oval form, ruptured to the extent of not quite an eighth of an inch by the exit of the moth at the top of one end, close to the leno to which it was spun above, and spun below to a leaf; the silk was whitish inside but externally had become of a dirty flesh-tint. The pupa-skin of ordinary figure lying back uppermost, had the tail held fast by threads of the hammock which supported it free from contact with the outer cocoon, the tail being very near well developed thorax and long wing covers, the tail of the abdomen tapering to rather a prolonged blunt point; in colour of a darkish warm brown, darkest on the thorax and anal point, the surface of the wing-covers and lower rings of the abdomen shining.

Emsworth: *July* 12*th*, 1881.

NOTES ON THE SPECIES OF *OPHTHALMOPHORA*, A GENUS OF GEOMETRID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The genus *Ophthalmophora* was founded by M. Guenée in the first volume of his "Uranides et Phalénites," for the reception of six beautiful species of moths, having upon the upper surface of their wings metallic, golden and silver lines and ocelli: the first three of the species described are supposed, though with doubt, to be from Brazil; none of them appear to be in the British Museum, though allied to *O. elysiata.*

The fourth species recorded by M. Guenée is *O. corinnaria*, a very pretty little species allied to *O. formosanta* of Cramer, and, if I am correct in my identification of the latter species, more nearly allied than M. Guenée supposed: unfortunately, we possess no examples of the genus from Surinam, but, judging from an example of what I take to be *O. formosanta*, obtained by Dr. Trail on the Rio Negro, I should say that the chief differences in M. Guenée's species were the less defined (sometimes even obliterated) pale costal border to the primaries, and the distinctly ocelloid character of the oval marginal spot of the secondaries.

If we set aside the close affinity of *O. corinnaria* to *O. formosanta*, which must, for the present, be open to question, the next point for consideration is, whether it is possible to separate specifically the form described and figured by Herr Snellen under the name of *O. lyonetaria.*

Herr Snellen says that *O. lyonetaria* "is distinguished from all the recognised species by the clear dark grey front wings with unicolorous front margin;" in two specimens of *O. corinnaria* which we have from Santarem, one has a whitish costal border as in Guenée's figure, the other has lost it as in Snellen's figure; yet, in every other respect, the two examples are almost identical; such being the case, I cannot think that the two so-called "species" are more than sports of one type.

Allied to the above is a beautiful little species, formerly in Mr. Norris' collection, from Limas—

Ophthalmophora bella, sp. n.

Primaries above rusty chocolate-brown, transversely streaked with greyish or sericeous whity-brown; costal border silvery-white, the striæ upon the costal area being also white; extreme edge of costal margin slightly yellowish; an arched sub-basal silvery-white line; a broad extremely oblique belt, its inner two-thirds silvery-white, and its outer third pale creamy-buff, from the inner margin to the second median branch, where it joins a slightly curved transverse grey stripe, which runs to the sub-costal vein; fringe creamy-white; secondaries silver-grey, densely irrorated with chocolate-brown, excepting at the borders; base chocolate-brown, bounded by a broad pearly-white band; apical border, from costa to second sub-costal branch, white, fringe creamy-buff; a forked, shining, metallic, opaline, tin-like band from the costa, its outer fork sub-marginal and bounding the apical patch, its inner fork terminating abruptly at the radial vein; between these forks is a conspicuous black ocellus with buff iris and crescent-like mother-of-pearl centre; a sub-marginal, embossed, plumbageous spot, with pink reflections, on the lower radial interspace, and therefore just beyond the apical sub-marginal forked tin-like band; this spot is followed by four pure silvery sub-marginal spots; fringe of this part of the wing of the same pale grey as the border; abdominal border sparsely spangled with shining opaline scales; body grey, abdomen narrowly banded with white; antennæ cream-coloured, with yellow inner margin: under-surface pure white; primaries, with the discoidal and apical areas, grey, and the costa pale buff; legs pale buff.

Expanse of wings, 1 inch, 4 lines.

Limas.

This beautiful little species is one of the links between the *O. formosanta* group and *O. amabilis* of Cramer, with which two types M. Guenée concludes his enumeration of the species of this genus.

Of the two forms described subsequently by Mr. Walker, *O. elysiata* comes nearer to *O. formosanta*, whereas, *O. danaeata* forms the type of a third group, having a series of four well-defined ocelli across the secondaries.

Nearest to *O. elysiata*, but also apparently allied to *O. alectaria* of Guenée, is a handsome new species recently received from Rio Janeiro—

Ophthalmophora Lucilla, sp. n.

Primaries above dull ferruginous, discoidal area sparsely mottled with small white striæ; costal border grey, densely striated with white, the edge creamy-white; fringe chrome-yellow; an oblique abbreviated band from the centre of the inner margin to the first median branch; white internally, bright yellow and widely diffused externally, bounded within by a dull blackish angulated stripe, which runs upwards to the lower radial vein, its extremity being interrupted by a small tapering triangular oblique sub-basal white stripe, continuous with the oblique band of the primaries; fringe yellow; outer border ochreous, with ferruginous marginal line; an embossed, macular, sub-marginal, metallic, tarnished silver stripe, which curves round at apex so as almost to enclose a large, pale, rust-red patch, in the centre of which is a highly embossed, golden, ocellid spot, with black edge and brown edged yellow iris; an irregular, almost W-shaped, series of scattered shining gold scales on the interno-median area; body grey, abdomen with narrow white margins to the segments and a white basal band; under-surface cream-colour, the outer half of the primaries and the external area of the secondaries washed with stramineous; a dusky marginal line; fringe yellow; primaries with bright ochreous costal border; interno-basal and discoidal areas slightly greyish; apical area and outer border broadly greyish-brown; secondaries with the sub-marginal stripe and ocellus of the upper-surface represented by grey spots. Expanse of wings, 1 inch, 6 lines.

Rio Janeiro.

The *Phrygionis pallicosta* of Felder and Rogenhofer (a specimen of which we have from Limas) is, I think, nearer to *Byssodes* than to *Ophthalmophora*, and the *Phalæna hilaria* of Cramer, referred to the latter genus with doubt by Walker, does not seem to me to have anything in common with it.

The species of the genus will, therefore, now stand as follows:—

1. *Ophthalmophora danaeata*, Walker. Santarem. Brit. Mus.
2. „ *elysiata*, „ Ega. „
3. „ *Lucilla*, Butler. Rio Janeiro. „
4. „ *alectaria*, Guenée. Brazil ?.
5. „ *pamphilaria*, „ „
6. „ *lyllaria*, „ „
7. „ *formosanta*, Cramer, Surinam. Rio Negro. Brit. Mus.
8. „ { *corinnaria*, Guenée. / *var. lyonetaria*, Snellen.* } Santarem. Brit. Mus.
9. „ *bella*, Butler. Limas. Brit. Mus.
10. „ *amabilis*, Cramer. Surinam. Pará. Brit. Mus.
11. „ ? *pallicosta*, Felder. French Guyana. Limas. Brit. Mus.

British Museum:
May, 1881.

Black form of Amphidasis betularia at Gainsborough.—It may interest your readers to know that I have taken three specimens of this black variety here. The third specimen I took this morning at rest on the walls of my house. I am not aware that this form of the insect had previously been recorded as occurring in this locality.—F. M. Burton, Highfield, Gainsborough: *June 27th*, 1881.

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* Described as from Jamaica.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ*.

BY R. H. MEADE.

(*continued from page* 28.)

4. SPILOGASTER, Macq.

Gen. ch.—Eyes bare, contiguous or sub-contiguous in male; arista plumose or sub-plumose; alulets well developed, the lower scale always longer than the upper one; abdomen mostly conical, and always spotted; anal vein not prolonged to the margin of the wing.

Sect. 1—*Legs entirely black.*

1. NIGRINERVIS, Zett.
2. MACULOSA, Meig.
   sigillata, Rond.
3. NOTATA, Fall.
4. QUATUOR-MACULATA, Fall.
5. DUPLICATA, Meig.
6. DUPLARIS, Zett.

Sect. 2—*Legs partly pale.*

7. COMMUNIS, Desv.
   cæsia, Macq.
8. QUADRUM, Fab.
   anceps ?, Zett.
   calceata ?, Rond.
   supera ?, Wlk.
9. DEPUNCTA, Fall.
   modesta ?, Meig.
10. FLAGIPES, Rond.
11. ULIGINOSA, Fall.
12. CONSIMILIS, Fall.
13. FUSCATA, Fall.

This genus contains several species which are very difficult to determine, they being so closely related, that it is almost impossible to separate them by distinct points of structure. This remark may be applied to the males, but it is still more applicable to the females; some of which, as R. Desvoidy pointed out in his remarks on his genus *Mydina*, are so different both in form and colour from those of the opposite sex, that it is very difficult to know to what species they belong, unless the two sexes are found together. On this account, it is not easy to draw up a correct list of species; I have, however, carefully examined all the specimens I have seen, and if I have erred, I believe it will be on the side of making too few rather than too many species.

S. MACULOSA, Meig.
S. NOTATA, Fall.

These two species bear a great resemblance to each other, and are often mixed together in collections; but they may be distinguished from each other by the following differences of character. The former is generally rather larger and more elongated in shape than the latter: the arista is shorter haired in *S. maculosa* than base in *S. notata* ; the 4th and 5th longitudinal wing veins are parallel, or slightly divergent at their extremities, in *S. maculosa,* while the 5th vein converges a little towards the 4th at its extremity in *S. notata.* The former is the more common species.

S. 4-MACULATA, Fall.

This may be distinguished from all of the three following species, to each of which it bears considerable general resemblance, by the following points of structure : it has the arista shorter haired ; it has only three dorsal thoracic bristles behind the transverse suture in the row between the middle and lateral black stripes instead of four ; and the posterior tibiæ are furnished with a number of long hairs on their inner sides, which are absent in the others. This species is not very common.

S. DUPLICATA, Meig.

Several different but very closely allied species have been confounded together under this name. Meigen says, "this species differs manifoldly in colour, size and design ;" which remark evidently shows that he included more than one species under the same designation. I find three very distinct though closely allied species, which may be named *duplicata, duplaris,* and *communis* ; the last will come under the second section, as the legs are partly pale.

I shall briefly describe the first species, and then point out how the two others differ from it.

S. duplicata : colour grey ; eyes of male sub-contiguous ; forehead and face very slightly prominent ; antennæ rather short ; arista long haired ; thorax with four longitudinal black stripes (the outer of which are interrupted at the suture) placed rather close together, and sometimes rather indistinct ; four dorsal bristles behind the suture ; scutellum marked with a fugitive brown spot at the base ; abdomen narrow and conical, whitish-grey, with four black spots, two on the second and two on the third segment, which vary in size and shape, being sometimes round and sometimes square or triangular ; in some specimens, an indistinct longitudinal dorsal stripe is also present between the spots ; wings clear with black veins, which are sometimes slightly clouded ; external transverse vein mostly straight, but more or less oblique ; internal transverse vein placed over the discoidal cell at about two-fifths from its end ; costal spine distinct ; calyptra yellowish-white ; halteres yellow ; legs black ; posterior tibiæ thickly clothed with short hairs on both sides, and having several strong bristles of uneven lengths on their outer surfaces. The female has the eyes widely separated by a grey-coloured frontal space, having a bifurcated black mark in the fore part. The external transverse veins are usually less oblique than in the male, and the posterior tibiæ have a slight rufous tinge ; it other respects it closely resembles the male. Length of ♂ and ♀, 2 to 2½ lines.

The late Professor Rondani to whom I sent some specimens for his inspection, said that in his opinion it was the *S. duplicata* of Zetterstedt, but not that of Meigen. This species is not uncommon, I have found it upon the ground on pathways in fields.

S. DUPLARIS, Zett.

This species differs from *S. duplicata* by being rather larger and stouter in shape ; by having the abdomen more oval ; by the absence of the brown mark at the base of the scutellum ; by the lines on the thorax being narrower and more distinct ;

by the external transverse vein of the wings being less oblique; and by the internal transverse vein being placed very slightly behind the centre of the discoidal cell, which may be considered as the most characteristic point of distinction. I am not acquainted with the female of this species, and it is not described by Zetterstedt. The specimens which I have named *duplaris* differ in some respects from the description given of that species by Zetterstedt, so I am not certain that they are identical with those he described. Rondani, to whom I sent this fly, together with the last, said that he considered I had rightly named it *duplaris*, Zett. ("talem esse cogito"). This species is not common. The only specimens which I have seen were captured in the neighbourhood of Edinburgh.

S. COMMUNIS, Desv.

In general colour, form, and design, this species closely resembles *S. duplicata*, but it is generally rather larger, and always has the tibiæ more or less tinged with red or yellow. The females usually have the legs much paler than those of the other sex, but the middle and posterior tibiæ are sometimes quite testaceous, even in the males, though in the most common variety the legs are so nearly black, that the red tinge, which is then confined to the posterior tibiæ, may easily be overlooked, and this species may then be confounded with *S. duplicata*.

Macquart only knew the male, which he named *S. cæsia*. His description is good though short, and applicable to the black-legged variety; for he says, "Pieds noirs; jambes quelquefois d'un testacé noirâtre." R. Desvoidy described this species (especially characterizing the female) under the name of (*Mydina*) *communis*, which name I have adopted, as it has the priority over that of *cæsia*, and is also very appropriate, from the general diffusion and abundance of this fly. Apart from the different colour of its legs, *S. communis* differs from *S. duplicata*, in the males, by having the lines on the thorax usually more distinct; the external transverse veins of wings more oblique, and often more clouded, as well as sometimes sinuous; by the internal transverse vein being placed further back, being about one-third from the end of the discoidal cell, instead of two-fifths; by the antennæ having the third joint rather longer in proportion; and by the calyptra being yellower and having the lower scale rather smaller than in *S. duplicata*. The females of *S. communis* cannot easily be confused with those of *S. duplicata*. They differ from the males of their own species, by having the thorax often indistinctly marked with the lines brown instead of black, and the spots on the abdomen small and also brown. The external transverse veins are also often much less oblique (this character varies much in both sexes), and the legs have the tibiæ and knees, as well as the ends of the femora, of the middle and posterior pairs, mostly distinctly testaceous, with a rufous tinge on the bases of the anterior tibiæ.

S. QUADRUM, Fab.

This is a very difficult species to define. It closely resembles some of the pale-legged varieties of *S. communis*, and I know of no decided characters by which the females of the two species can be separated. The males differ by the eyes being rather more widely separated in *S. quadrum* than in *S. communis*; by the thorax without costal spine; having the external transverse vein straighter and less oblique than in *S. communis*; and the internal transverse placed nearer to the centre of the discoidal cell. The middle femora in *S. quadrum* are furnished with bristles along their whole under-surface, while in *S. communis* a few long bristles only are found near the base. This is not a common species.

S. DEPUNCTA, Fall.

In this species the basal two joints of the antennæ are often pale; the palpi are also generally rufous, though Rondani says they are black at the apex and red internally. This species may be recognised by having only three posterior dorsal thoracic bristles behind the suture, while there are four in all the other species that I know in this genus, with the exception of *S. 4-maculata* and *S. fuscata*.

S. FLAGIPES, Rond.

The males of this species closely resemble those of *S. depuncta*; but differ in being rather larger; in having four instead of three posterior thoracic dorsal bristles; and especially by having several very long straggling hairs or bristles on the outer sides of the posterior tibiæ; by the presence of which this rather rare fly may at once be recognised. I have not seen a female.

S. CONSIMILIS, Fall.

This species has the arista furnished with such short hairs, that it was placed by Schiner in the genus *Limnophora*; it has, however, all the characters of a *Spilogaster*.

S. FUSCATA, Fall.

This is an aberrant species, which differs from all the others in the genus by having only three central triangular spots, placed longitudinally on the dorsum of the abdomen, instead of two lateral ones on each of the middle segments, as in the other species. It is rare in England.

(To be continued).

ON CERTAIN BRITISH *HEMIPTERA-HOMOPTERA*.

BY JOHN SCOTT.

(*Resumed from vol.* xii, *p.* 276).

ADDITION OF THREE NEW SPECIES OF DELTOCEPHALUS TO THE BRITISH LIST.

I think I may safely say that the genus *Deltocephalus* is one of the most, if not the most, perplexing groups in this Order. The species are divided into little sections by external characters, which so closely resemble each other that at times it is difficult to separate them, and, as in the *Delphacidæ*, nothing but an examination of the genitalia will lead to any certainty as to their identity. Fieber describes 67 as European, and adds, in his "Katalog der europäischen

Cicadinen," 25 others as "Nicht gesehene Arten," viz.: of those described by Mulsant, 1; Dahlbom, 2; Kirschbaum, 13; Sahlberg, 9. Of one of Sahlberg's species, I have disposed, viz., *D. paleaceus*, as the specimens he sent to me were evidently only *D. Falleni*, Fieb. (see Ent. Mo. Mag., xii, 271, 11). Dr. A. Puton, in his list, published in 1875, enumerates 89 species, but these include the unknown ones of Dr. Fieber, and since then 4 others have been added, making the number 94. It is probable that some of the names may sink, but on the other hand, there may be several yet unknown which will fill up the ranks.

DELTOCEPHALUS FLORI.

Deltocephalus Flori, Fieb., Verh. z.-b. Ges., xix, 210, t. v, 25; *D. picturatus*, Fieb., Verh. z.-b. Ges., xix, 209, 23, t. v, 23; *D. obtusivalvis*, Kirschb., Cicad., 142, 117.

Pale brown. *Crown* white, with a brown triangular patch divided at the apex, outer margins of the patch blackish; posterior to this and before the eyes a short blackish streak adjoining the margin; from the anterior margin of the eyes and extending to the base a brown patch more or less distinctly divided transversely by a whitish line. *Pronotum* yellowish-brown, with a central longitudinal line, and another short one on either side, milky-white. *Scutellum* yellowish-brown, apex narrowly black. *Elytra* pale brown, nerves more or less milky-white; cells more or less broadly margined with black at the base and apex, and generally separated by a milky-white patch, thereby giving them the appearance of being spotted. *Legs* yellow; *thighs:* 1st pair broadly black at the base, and with a black spot on the inner side a little way before the apex; *tibiæ* yellow, apex black, spines on the 3rd pair pale; *tarsi* black, basal half of the 1st joint of the 3rd pair yellow. *Abdomen*, ♂, underneath, black, margins of the segments narrowly whitish or yellowish-white; *genitalia:* basal flap triangular, black; plates black, margined with white, apices rounded, and leaving a slight notch between them, and with a few stout pale hairs on the outer margin. Length, 1⅓ line.

I have seen two specimens taken by Mr. Norman at Forres. 26th June.

DELTOCEPHALUS REPLETUS.

Deltocephalus repletus, Fieb. Verh. z.-b. Ges., xix, 208, 20, t. v, 20.

Yellowish-brown. *Crown* in front yellowish-white, posteriorly brownish, as broad across the anterior margin of the eyes as long, with four black spots on each side of the centre, viz., two triangular at the apex, and two somewhat trapezoidal in a line with the anterior margin of the eyes, between these and close to the margin is another minute black spot or streak; *face* black, with six or seven short, curved, narrow, pale yellowish striæ on either side, somewhat clubbed next the centre. *Pro-*

patch at the basal angles. *Elytra* yellowish-brown, nerves paler; *clavus:* apices of the cells black, nerves very pale yellow; *corium:* anteapical and apical areas margined with black, the latter broadly exteriorly. *Legs* yellow; *thighs:* 1st pair black at the base, and with a more or less distinct band near the middle; 2nd, with a more or less distinct blackish line down the upper margin; *tarsi:* 3rd pair black. *Abdomen:* above black, posterior margin of the segments yellow; genitalia, ♂, upper portion yellow, plates black, sides yellowish at the base, and margined with stout yellow hairs. Length, 1¼ line.

Taken by Mr. Norman, at Forres. 26th June.

DELTOCEPHALUS DISTINGUENDUS.

Deltocephalus distinguendus, Flor, Rhyn. Livl., ii, 240; Fieb., Verh. z.-b. Ges., xix, 209, 21, t. v, 21; *Iassus (Deltocephalus) pseudocellaris*, Flor, Rhyn. Livl., ii, 547; Thoms., Opusc. Ent., i, 73, 64; J. Sahlb., Not. Fenn., xii, 314, 10.

Pale brownish-yellow. *Crown* pale, about as long as broad across the anterior margin of the eyes, with a more or less distinct brownish- or reddish-yellow triangular patch on each side of the apex, and two others somewhat square in shape, extending from about in a line with the anterior margin of the eyes to the base; *face* brown, with five or six yellow arched streaks on each side, slightly clubbed interiorly, and with a short yellow longitudinal line down the centre at the apex; *clypeus* and *lora* yellow. *Pronotum* yellowish, not so long as the head measured down the centre, with a faint channel in front running parallel with the anterior margin, forming a slight collar. *Scutellum* yellow. *Elytra* pale brownish-yellow; as long as, or a little longer than, the abdomen; nerves pale, apical cells narrowly black on the posterior margin. *Legs* yellow; *thighs:* 1st pair with two blackish spots or bands; *tibiæ* yellow, 3rd pair spotted with black down the outer and inner margins on the under-side, the largest spots on the outer margin, apex black, spines yellow; *tarsi:* 3rd pair black, 1st joint yellow. *Abdomen*, ♀, black underneath, sides and the two last segments yellow, except the middle of the posterior margin of the latter; posterior margin concave in the middle and on the sides, leaving a slight projection on each side of the base of the lateral lobes; lateral lobes brown, minutely spotted with yellow. Length, 1¼ line, barely.

I took two specimens of this species at Stockton Forest, near York, in August, 1865, and I forwarded them to the late Dr. Fieber, who returned them to me with the above name. Unfortunately, they got put on one side, and I only discovered them the other day.

Lee, S.E.: *9th July*, 1881.

Additions to the Morayshire Hemiptera.—The two species of *Deltocephalus* undetermined, which I mentioned in my list of Morayshire captures, page 18, *ante*, Mr. Scott has returned to me as *D. Flori*, Fieb., and *D. repletus*, Fieb., both new to our lists. *Flori* had occurred at Forres, in 1878, but remained still undetermined. —GEO. NORMAN, Athole House, Pitlochry: *13th July*, 1881.

Unusual abundance of Thecla w-album.—In a lane near Hemel Hempstead, leading from Felden to Bovingdon, *Thecla w-album* has appeared during the last few days in great abundance. About ten in the morning it begins to fly, fluttering and fighting among the boughs of various trees, hovering along the tops of the hedges, and settling on the *Umbelliferæ* that skirt the meadows; the number is hard to estimate, but it amounts, probably, to some thousands.—B. Piffard, Hill House, Hemel Hempstead, Herts; *July 13th*, 1881.

Abundance of larvæ of Charæas graminis.—Mr. William E. A. Axon has sent us a note on this subject which was read by him at a Meeting of the "United Field Naturalists," at Greenfield, on the 19th June, and is reprinted from the "Manchester City News." It is to the same effect as our more condensed account in the July No. (p. 39 *ante*) with the following addition:—"The insects have been greatly diminished by the crows and gulls, and the rains have also helped in clearing the land of them." The birds doubtless did their part in diminishing the number of the larvæ, but the efficacy of the rains may be questioned; much of the apparent diminution of the abundance having, probably, been caused by the retirement of the full-fed larvæ under ground in order to become pupæ.—Eds.

Larentia didymata bred from Anemone nemorosa.—I found this larva in our glorious woods on the leaves of *Anemone nemorosa:* it eats little round holes in the surface of the leaf and when older it nibbles the edge of the leaf; from its similarity to the larvæ I had previously met with feeding on primrose flowers, and which I knew to be those of *L. didymata*, I suspected it might prove to be the same species, and this has now been established by the appearance of the moth in my breeding-cage.—Peter Inchbald, The Lodge, Hovingham, York: *June 27th*, 1881.

Boletobia fuliginaria in London.—I am pleased to inform you that I have been fortunate in having had another specimen of *Boletobia fuliginaria* handed to me by our man, who took it in the same locality as the one recorded by me in 1879, on our warehouse door in Upper Thames Street, when the warehouse was opened this morning; it is a male, and in good condition.—J. R. Wellman, 219, Elm Park, Brixton Rise, S.W.: *July*, 1881.

Acidalia straminata, &c., in Yorkshire.—On the occasion of the Yorkshire Naturalists' Union's visit to Thorne Moor, near Goole, on Saturday last, July 9th, *Acidalia straminata* was taken by different members, but was first detected by Mr. Prest, of York. The species is quite new to the county of Yorkshire. Evidently, it was only just getting well out, as the specimens were in beautiful condition. Amongst other species we took at the same time were *Chortobius Davus*, in abundance; *Hyria auroraria*, not uncommon; *Macaria liturata*, *Scodiona belgiaria*, not uncommon; *Emmelesia alchemillata*; *Platypteryx falcula*; *Anarta myrtilli*, common; *Crambus margaritellus*, abundant on the damper parts of the moor; *C. Warringtonellus* just appearing; *Phycis carbonariella*, common; *Eupœ-*

Re-occurrence of Diasemia literalis in Pembrokeshire.—It is highly satisfactory to be able to report that, after either disappearing or being overlooked for two years, *Diasemia literalis* has again turned up. The warm weather which we experienced towards the end of May brought it out in the dry pastures on the hill sides in the middle of the County. It was not at all common, but with long and close working my boy and I secured a score. They flew up, as usual, from any litte tuft of herbage and settled again at the distance of a few yards, showing no apparent preference for any particular species of plant, and thus giving no clue to their food in the larva state. Indeed, both the food and the mode of feeding of this species are hidden mysteries. I have spent hours at a time when the larva *must* have been feeding, in closely scrutinizing the plants on their favourite grounds, examining every leaf and blade and even pulling up the plants, but without finding any indication whatever.

I think that the insect must be widely scattered, in suitable localities, through the County, for when working for *Tortrices* in a pasture only eight or nine miles from here, my son caught a specimen and showed it to me while in the net. We saw no more though we worked the neighbouring fields, and could only suppose it to be a stray in search of "fresh fields and pastures new," yet this would even indicate vitality and the migratory instinct in the species, rendering its early extinction far from probable. I heartily hope that it may spread further, and nearer, and so come within reach, for at present the journeys to its known localities are so long that it is hardly possible to manage more than one or two visits while it is out, and these visits are apt to be spoiled by wet or, still more, by wind, to which this delicate species is very sensitive.

As far as I can discover these pastures produce only the most ordinary and abundant kinds of plants, I do not know of any local species occurring in them. There are a few small thistles, ragweed, and knapweed, also rather stunted grass of good quality and scanty quantity, a few plants of *Lepidium Smithii*, Dandelion, Oxeye-daisy, and *Apargia* in plenty, patches of a short bluish *Carex*, and doubtless many other plants that I do not remember, but neither of these seems to suggest the probable food of *D. literalis*.—CHAS. G. BARRETT, Pembroke: 16*th June*, 1881.

Ennychia octomaculalis in Pembrokeshire.—To any one accustomed to collecting in English woodlands, the capture of *Ennychia octomaculalis* is a matter of small moment, but in a secluded corner of Wales, where it is hardly known, the occurrence of this lovely species is interesting enough.

In May of last year, when searching for larvæ among *Silene maritima*, *Ulex*, and *Solidago*, I was almost startled to find a dead and wasted specimen of this species lying on one of the *Solidago* plants, there being no previous record of its occurrence in the county. The locality was a steep undercliff formed by the action of sun, rain, and frost upon the cliffs of clay-slate, and causing them to break up into small angular fragments, and to form a soil highly suitable to the growth of the plants already mentioned. In the middle of May of this year I was again on the spot on a warm sunny afternoon, and, when in a place where it was hard to stand still, and harder to walk, while a sudden turn to strike at a moth might have resulted in a roll of fifty feet, a most exquisite newly-emerged specimen rose from a *Solidago* plant, and danced out of reach. Not, however, for long, for it was presently circumvented and secured, and in the course of two hours of climbing, creeping, and scrambling, half a dozen more were safely boxed, whilst others took an unfair advantage of the nature of the ground to escape.

It is interesting to see that in this isolated locality the species has by no means dwindled in size, or diminished in beauty, but on the contrary, is adorned with white spots of unusual size, the minute white dot usually present on the centre of the fore-wings having become a fair-sized spot, so that the name *octomaculalis* has almost become a misnomer.

A single specimen has since been found in a wood in the middle of the county, but this is of the ordinary form.—ID.

Eupœcilia Mussehliana, and other Lepidoptera, near Pembroke.—When working for *Diasemia literalis*, a fortnight ago, we had the good fortune to disturb and secure several beautiful specimens of *Eupœcilia Mussehliana*, a species which, from miscalculation of its time of appearance, or some other cause, I hardly saw at all last year. It hides closely in the short herbage, and is very hard to put up, and when disturbed, flies sharply a short distance, and then drops and hides itself, much in the manner of *Chrosis tesserana*. About sunset it flies more freely and higher, but only if the evening is warm and still. Such evenings are not frequent, and we have worked hard in several localities since, but with little success.

Sometimes we had a little diversion, *Pyrausta ostrinalis* would appear in abundance and wonderful loveliness, and *insist* on being captured; one evening, an excited ♂ *Bombyx rubi* plunged headlong into my net while I was looking at a small tortrix, and created no small commotion. He was acceptable, however, to the lad—being his first specimen—and served to reward him for catching me a fine *Mussehliana* a few minutes before. Another evening the search led us into a damp corner of a field, and a ♀ *B. rubi*, looking from its queer zigzag flight like an enormous ♀ *Hepialus humuli* flitted past me to fall a victim to the boy's ready net. There we found *Melitæa Artemis* asleep, sitting on the leaves of *Scabiosa succisa*, with antennæ held apart and rather forward, not in the usual fashion of sleeping butterflies. Little else was about except occasional specimens of the two pretty *Euclidiæ*, and *Penthina marginana*, looking *white* when flying, from the colour of its hind-wings.

The food of *Mussehliana* is still unknown, a rumour that it had been bred from *Pedicularis palustris* does not seem to have been confirmed. Prof. Zeller's suggestion of *Linum catharticum* seems as good as any other, for the plant certainly seems to grow wherever the insect occurs—and in most other places—but there has been, so far, no indication of larvæ found about it. I think the insect is a stem-feeder, but have no proof, nor any idea in *what* stem.—ID.

Captures of Coleoptera in the Isle of Wight.—During a short stay at Ventnor last April, I obtained a few good *Coleoptera*: the beetle I especially wanted to get was the very rare *Homalota princeps*, Sharp, which was recorded from Ventnor by Mr. E. Saunders last year (Ent. Mo. Mag., vol. xvii, p. 116): of this I secured a

Mo. Mag., vol. xvii, p. 235; the following others, however, are perhaps worthy of mention:—*Trechus lapidosus*, of which I found two specimens after a great deal of labour, the species certainly deserving its name. *Oxypoda nigrina*, Waterhouse (this last I have since found in some numbers in my hot-bed in Lincoln), *Diglossa mersa*, *Phytosus spinifer*, a *Myllæna*, which seems to be *intermedia*, but appears to have rather longer antennæ than that species, *Tachyusa uvida* (very abundant among shingle below high-water mark), *T. sulcata*, *Bryaxis Waterhousii*, *Ptenidium punctatum* (rather common under sea-weed), and *Aleochara mœsta*; this last species is said to be common, but I have never found it so. At Luccombe I found a colony of *Æpys marinus* under one stone, but could not find another specimen anywhere. At Sandown *Otiorhynchus ambiguus* was rather common; *Tychius lineatulus* was abundant at the roots of *Anthyllis*, and *Ceuthorhynchideus nigro-terminatus* rather common on *Daucus maritimus*; I found one very large *Curculio* larva at the roots of *Anthyllis*, evidently that of *Otiorhynchus ligustici*, which is found on the spot where I came across it. I could not, however, find the perfect insect.

Carabidæ, owing probably to the lateness of the season, were scarcer than I have ever known them.—W. W. Fowler, Lincoln: *July* 12*th*, 1881.

Remarks on Dr. E. Joly's Cænis maxima.—Mr. Vayssiére in Ann. Sc. Nat., Zool., Jan., 1881, p. 4, note, pointed out a mistake made by me some time ago concerning the places of origin of the tracheal-branchiæ in *Cænis*, which had led me to suppose that their positions in *C. maxima* differed from those of the corresponding organs in *Cænis* (typical). I had previously sent a note to the Magazine (published in the last February number) stating that the examples of *C. maxima* originally examined by me were all of them defective [all of them had lost the foremost pair of tracheal-branchiæ] and "that (judging from specimens in a better condition of preservation) the species was likely to be a real *Cænis*." To save space no particulars were entered into; I was aware of the gill-bearing segments being the same in the insect as in the genus mentioned, but was not sure whether their gills corresponded exactly in structure, or not. For although differences in this respect were obvious in the specimens of *Cænis* and *C. maxima* before me, it seemed quite possible that they might be due to a disparity in grade of the nymphs, and that the gills of more mature nymphs of *Cænis* might become conformable to those of *C. maxima*; but specimens lately captured show that no such change takes place. *C. maxima*, therefore, does not seem to be a true *Cænis*; yet it does not necessarily follow that it is a *Tricorythus*. It would be safer to face the fact that the nymph is of undetermined genus, closely akin to *Cænis*,—possibly a *Tricorythus*. My anxiety to avoid jumping to conclusions rather than reach them through the course of actual observation is (it seems) liable to be misinterpreted. The aim of the February note was not (as one correspondent imagined it to have been) to cancel *Tricorythus*, but to advocate a suspension of judgment about the generical position of *C. maxima*, pending further investigations. In the absence of evidence sufficient to demonstrate its true rank, little would be gained by citing it as *Tricorythus* (?) *maximus* instead of *Cænis maxima*, when twelve months hence it might be possible to prove that *Tricorythus* is as distinct from it as *Cænis*. Merely giving names to an animal inadequately known does not further science to any material extent, but is often a hindrance to progress.—A. E. Eaton, Chepstow Road, Croydon: 6*th July*, 1881.

Limnophilus subcentralis, Brauer, in Scotland.—I have just received a ♀ of this from Mr. Peter Cameron, who captured it near Loch Awe.—JAMES J. KING, 207, Sauchiehall Street, Glasgow: *July*, 1881.

Review.

THE MICROGRAPHIC DICTIONARY, Edited by J. W. GRIFFITH, M.D., &c., and ARTHUR HENFREY, F.R.S., F.L.S., &c.

Fourth Edition, edited by J. W. Griffith, M.D., &c., assisted by the Rev. J. M. Berkeley, M.A., F.L.S., and T. Rupert Jones, F.R.S., F.G.S. Part i. John Van Voorst, 1, Paternoster Row: July, 1881.

The fact that the third edition of this standard work has been exhausted in about six years, and that the fourth edition is commenced, is a sufficient guarantee for its excellence and popularity; it is also a hopeful sign, as indicating the great increase of students of Microscopy. The survivor of the two original editors is also to be congratulated on having retained the assistance of two of his colleagues connected with the third edition. We notice that several additional crowded plates (one of which appears in the first part) are promised, and that there is considerable modification in the text, especially as regards the bibliographical references (one of the special features of the work), so as to bring it up to date as closely as possible, thus maintaining its value as a book of reference. The whole is expected to be completed in about 21 thick monthly parts. The third edition occupied nearly 900 pages, with 48 plates. In the present we are promised 53 plates, and no doubt the text will be increased in proportion, so that the book bids fair to soon become a formidable rival of a well-known London Directory, so far as bulk is concerned.

ENTOMOLOGICAL SOCIETY OF LONDON: *June 1st*, 1881.—H. T. STAINTON, Esq. F.R.S., &c., President, in the Chair.

The Rev. E. N. Bloomfield was elected a Subscriber.

Mr. J. W. Douglas sent for exhibition living specimens of *Orthezia urticæ*, Linn., from Darenth Wood, *O. cataphracta*, Shaw., from Pitlochry, carded examples of a new species proposed to be called *O. Normani*, after Mr. G. Norman, who has recently found it at Pitlochry, and specimens of *Aleurodes carpini*, Koch, taken on 28th May, on hornbeam-leaves at Bexley Wood.

Mr. T. R. Billups exhibited *Crabro clavipes*, Linn. and *Molorchus minor*, Linn.

Mr. J. Sang exhibited some interesting British *Lepidoptera*.

The following communications were received:—Notes by Mr. G. E. Piercey on an insect troublesome to travellers in Turkestan, probably *Argus persicus*. Read:— The report of the Committee of the Society on *Phylloxera* on Vines in Australia; A communication from the Colonial Office about an insect destructive to the eggs of Locusts in the Troad; "On the *Tortricidæ*, *Tineidæ* and *Pterophoridæ* of South

A COMPARISON OF THE *PTEROPHORI* OF EUROPE AND NORTH AMERICA, SUGGESTED BY LORD WALSINGHAM'S "PTEROPHORIDÆ OF CALIFORNIA AND OREGON."

BY R. C. R. JORDAN, M.D.

Lord Walsingham, in his "Pterophoridæ of California and Oregon," gives us the entomological result, as far as the plume-moths are concerned, of rather more than a year's wanderings in Oregon and California. This district may be roughly stated to be the West Coast boundary of North America, between the 46th and 34th parallels of latitude, answering, therefore, to an imaginary coast line extending from the middle of France to the north of Africa; it will be important for us also to bear in mind that all insects identical with European forms have, probably, been first filtered by passing through Asia, that is, taking it for granted, that the exodus has been from, and not into, our quarter of the earth.

Of course, in so short a time it must be utterly impossible to have exhausted the plumes of so large a district, but how well our author worked is shewn by the fact that thirty-nine species are described as natives, of which twenty-eight are new to science. It seems to me that it will not be a useless task to compare these plumes briefly with those of our own northern Palæarctic region. The author commences with *Chrysocorys*,* our English *C. festaliella* occurs in Oregon, and six specimens were found; this little insect was before known to have a wide range, being recorded from Corsica,† but it was not previously known to extend into America. Clemens had, however, described a species from Pennsylvania, very nearly allied to *festaliella*, viz.: *C. erythriella*; its larva feeds on the fruit-racemes of the sumach; he thus describes it:—"It‡ tapers anteriorly and posteriorly, incisures deep, segments elevated in the middle, with a single row of transversely arranged epidermic points on each ring, each one giving rise to one or two rather stiff hairs, abdominal legs very slender and short, terminal placed posteriorly. Head with a few hairs, ellipsoidal, pointed, rather small and pale brown. The body is uniform dark green." A third American species, *C. felicella*, is here figured and recorded from Northern Oregon, in which the wings are "unicolorous fuscous, with a slight purplish tinge," the larvæ are again noted, as "small, green, and slightly hairy," they feed on *Orthocarpus*, one of the *Scrophulariaceæ*; the cocoon, which is also figured, is of white silk, but otherwise, as in *festaliella* and *erythriella*. North America has, therefore, three known species of *Chrysocorys*: *C. festaliella*, Hb., *C. erythriella*, Clem., and *C. felicella*, Wlsm.

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* In the present paper, all reference to the true position of this genus shall be waived.

† By Herr Mann. Tineina of Southern Europe, p. 120.

‡ Papers of Dr. B. Clemens, edited by H. T. Stainton, p. 132.

No specimens of the European genus *Agdistis*, nor of the North American *Scoptonoma* occurred to our author. *Cnemidophorus* also was not found.

The genus *Platyptilus* was freely represented, no less than thirteen species being figured, of which one, *P. Bertrami*, is common both to Europe and America; the other twelve being, as far as is known, exclusively American, and of these, ten are new to science. In the whole of Europe only ten, or, at the most, eleven species have as yet been discovered; in both cases the *Gonodactylus*-group, or that section where the anterior-wings are light coloured with a well marked dark triangle on the anterior costa, is far the most numerous.

If we include *P. grandis*, Wlsm., as more nearly allied to *P. nemoralis* than to *P. Bertrami*, eight species of this group are here figured, and the distinctions between them are admirably shewn in the illustrations; the two of special interest are *Platyptilus cardui** and *Platyptilus orthocarpi*, Wlsm.: we are so accustomed to look on the *Platyptili* as having larvæ which are internal feeders, passing their lives in the stems of composite plants, that this would have been to me, at least, part of the diagnosis of the genus, but in *P. cardui*, the larva is gregarious in the heads of thistles, and in *P. orthocarpi* there is a still wider divergence from the usual habit, the larva feeding on the buds and flowers of *Orthocarpus*, one of the *Scrophulariaceæ*; *P. cardui*, has another point of interest in the perfect insect approaching so very closely to *P. Zetterstedtii*, one of the chief differences being that the brown colour of the hind leg between the two pairs of spurs is wider than in *P. Zetterstedtii*; the habit of the larva is very distinct, *Zetterstedtii* being an internal feeder, inhabiting the stems of *Senecio nemorensis* (and, also, according to Heinemann, of *Solidago virgaureæ*). Of the other *Platyptili*, three are almost unicolorous; one of which, *P. modestus*, Wlsm., approaches the genus *Mimeseoptilus* in a most remarkable way, not in structure, but in the arrangement of the spots and colouring.

The question of identity of *ochrodactylus* and *Bertrami*, and of their identity with the *Bischoffii*, of Zeller,† and of the *cervinidactylus*, of Packard, is here entered upon; according to Lord Walsingham, Prof. Zeller "is now inclined to regard *P. Bertrami*, *ochrodactylus*, and *Bischoffii* as all belonging to the same species," so we may, therefore, safely regard *Bischoffii* as a synonym.

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* It seems to me imperatively necessary to alter these "bastard names," but would it not be

In a series of thirty specimens now before me, one (reared from tansy by Mr. Jeffrey, of Scarborough) has a most decided black spot* "just above and near the end of the split." This may clear the difficulty of Packard's *cervinidactylus*. It is quite possible that he described it from such a specimen, this is the brightest in my series, it has long falcate anterior-wings; at the other extremity is a type from Herr Mühlig, so light as to bear a striking resemblance to the figure of *P. petrodactylus*, Walker, in the plate before me; the anterior lobe is truncate, without any approach to the falcate form of the former specimen.

As to the identity of *ochrodactylus* and *Bertrami*, I confess myself quite unable to give a decided opinion, there seems to me no distinct line between the richly fawn-yellow specimens with falcate wings, and the pale straw coloured insects with the apex as square as in *gonodactylus*, the extremes of the series look most distinct, but the gradations are such as to make it very difficult to draw the boundary line. Mr. Stainton says,† "The best character is furnished by the hind legs; in *Bertrami* the tibiæ are slightly browned, but the tarsi are spotless whitish, in *dichrodactylus* the tibiæ are brown at the middle and apex, and there is a brown spot at the end of the first tarsal joint." Heinemann‡ draws the following distinctions: "very close to the former species, but the fore-wings less sharply pointed, all the brownish-red dusting paler, the spots before the division pale, often entirely wanting, the lines at the hind border finer; on the third feather of the hind-wing the black scales behind the middle are either less or wanting. The legs are yellowish-white, the tibiæ of the fore-legs are brown at the end, in the hind tibiæ the reddish-brown colour is equally spread from the middle to the end. It is widely diffused, the larva lives in *Achillea ptarmica* and *Tanacetum vulgare*." These distinctions, slight as they are, seem certainly inconstant in apparently fine examples; added to this, Heinemann makes the food-plant of the larva doubtful, for he says of *ochrodactyla*, "in the stem of *Tanacetum*

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* Heinemann, in his description of *ochrodactyla* says, "vor der Spaltung zwei schwarzbraune, mehr oder weniger deutliche Punkte."

† Ent. Mo. Mag., vol. ii, p. 138.

‡ Heinemann, die Schmetterlinge Deutschlands und der Schweiz, Band 2, Heft 2, p. 784.

vulgare," of *Bertrami*, as quoted above, he says, "in *Achillea ptarmica* and *Tanacetum vulgare*."* It wants a careful description of the larvæ to decide the point.

(*To be continued*).

NATURAL HISTORY OF *MIANA EXPOLITA*.

BY WILLIAM BUCKLER.

With much gratification I am able to record the interesting discovery of the larva of *M. expolita*, and of its food-plant; a puzzle that had hitherto baffled all attempts at solution, has at length been unravelled by the assiduous efforts of Mr. J. Gardner, of Hartlepool, to whose kindness I have been indebted for the opportunities of studying the larva, both in the past and present seasons.

An attempt to rear this species from the egg was undertaken by the Rev. J. Hellins in 1873, when I received eggs from Mr. J. E. Robson, of Hartlepool; and in this way a record was made of the earlier stages, although but a single larva reached full growth, and that disappeared before the change to a pupa could take place.

The eggs laid on July 22nd, arrived on the 24th, 1873; the larvæ were hatched on August 3rd, and were put into a bottle at first with various grasses, out of which they seemed to choose the garden riband-grass, *Phalaris arundinacea*, var.; so, in the course of the autumn, they were placed on growing plants of this grass in a flower-pot and put out of doors; about the middle of October one was extracted from its mine in the stem of this grass, and figured by me; after hibernation it was again extracted at the end of April, 1874, and again figured and sent back to its food; but after this it disappeared, and so nothing could be published about it.

Mr. Gardner kindly sent me a full-grown larva and its food-plant (*Carex glauca*) last year, when I first bred the moth; and this year six larvæ, more or less mature, on the 31st of May, and the moths appeared July 13th to 19th. The plants of *Carex* were from six to eight inches in height, and the habit of the larva is to eat out the very heart of a plant working its way down to the white portion close to the root; and, as Mr. Gardner observed, when one plant has yielded its nourishment the larva migrates to another, and of this habit he had good evidence in some plants he found ravaged and deserted by their former tenants.

The egg was noted as being of globular shape, with soft glistening shell, scarcely showing traces of a sort of pitting all over; in colour a very pale straw-yellow.

The newly-hatched larva was of the regular *Miana* form, stoutest at third segment, whitish in colour, shining, with the head black, a dark plate on second segment, the usual dots very small and distinct, but dark in colour.

In captivity about the last week in October before hibernation, the larva is nearly or quite five-sixteenths of an inch long, of the true *Miana* figure, stoutest at the third and fourth segments, tapering a little behind, the head smaller than the second, is flattened and wedge-shaped towards the front and of reddish-brown colour, darker brown at the mouth, a broad shining semi-transparent plate on the second segment of the same colour as the back, which is lightish orange-brown, having a dorsal line of pale orange-ochreous with two short transverse bars about the middle of each segment; the sub-dorsal marking of the same pale colour is broadish and bounded below by the light orange-brown of the side, from which an upward curved streak intersects the marking at the first subdividing wrinkle and two shorter curves follow without much intersection; the black spiracle at the lower edge is followed by the pale orange-ochreous of the belly; a pale shining plate is on the anal segment.

After hibernation, at the end of April, the larva is nearly half an inch long, rather slender but still thickest at the thoracic segments; the design and colouring of the back and sides are much the same as before, but less well defined, as the brown of the back and sides is paler, and the belly has a faint watery greenish-yellow tint; the anterior legs are reddish-brown.

When found at large in the *Carex*, full grown, the larva is from half an inch to nearly five-eighths in length, of the same general figure as above, the segmental folds well defined, the subdividing wrinkles are deep on the third and fourth but moderate on other segments which are dimpled along the sides: the general ground-colour of the body is dull ochreous with a tinge of reddish; the back is deeply tinged with dull purplish-red on the third, fourth, fifth, sixth, seventh, and eighth segments; the dorsal line so inconspicuous as only just to be discerned as pulsating, the segmental folds are pale ochreous; the head is reddish-brown and shining, with dark brown mouth and black ocelli, a yellow-brown shining plate on the second segment has its front margin rather darker brown, the anterior legs of the same colour; on the sides of the third and fourth segments is a triangular group of three large brownish-yellow horny spots, the ordinary tubercular dots on other parts of the body are very minute, each with a fine short bristly hair, and a faintly paler ring round its base; the spiracles black, the narrow plate of yellowish-brown on the fore part of the anal segment has its front margin rather bluntly pointed in the centre, that of the anal flap is of the same shining colour, flattened, but with a little raised ridge round behind, from which proceeds a few short bristly hairs, the ventral and anal legs tipped with brown hooks, the skin of the body is smooth but without gloss.

The pupa is subterranean but often lies only a short distance beneath the surface, and sometimes is scarcely buried amongst vegetable remains slightly held together by a few threads of silk; it is five-sixteenths of an inch in length, and of the usual *Noctua* form, stout across the thorax, the abdomen tapering and ending with two fine points: its colour for a time is very pale brown, afterwards dark brown, its surface shining.

Emsworth: *August* 11*th*, 1881.

TWO NEW SPECIES OF *ICHNEUMONIDÆ*.

BY E. PARFITT.

MESOLEIUS BRACHYACANTHUS.

Black, head wider than the thorax, mouth and palpi straw-yellow. Antennæ black above, ferruginous beneath, the basal joint very small, the second rather large, with an arched protuberance above. Thorax gibbous, smooth, shining black, very finely punctured; mesothorax with two short, lateral, concave spines; the metathorax with two raised lines crossing each other at nearly right angles, forming a St. Andrew's cross. Wings ample, with a faint smoky tinge, and beautifully iridescent; stigma and nerves testaceous, all growing paler towards the base, where they are pale straw-yellow, scale pale yellow, cellule 4-angled, irregular, oblique. Legs: anterior coxæ, and trochanters, the first testaceous-yellow, the second pale sulphur-yellow, the posterior black, with the apex of the trochanters pale sulphur-yellow. Anterior and median femora testaceous-yellow, posterior piceous, with a dark stain on the inside towards the base, where it is pale yellow. Anterior tibiæ and tarsi pale yellow, the apical joints of the tarsi fuscous or nearly black; posterior testaceous, the apex and tarsi nearly black. Abdomen black, cylindrical, but growing gradually larger towards the apex, finely not deeply punctured, the base

I have two specimens of this species, both males, they were captured in the neighbourhood of Exeter, 1879, and, up to the present, I have not seen another.

HEMITELES GYRINI.

♂. Head, thorax, and scutellum black, head somewhat square, wider than the thorax; mouth ferruginous, palpi pale straw-colour. Antennæ: black above, piceous beneath, the basal joint large, inflated, with a deeply impressed annulus near the apex, second joint pale yellow at the base; all densely pubescent. Thorax smooth in front, the rest clothed with a yellowish pubescence. Wings ample, hyaline, iridescent, stigma and nerves dark piceous, the base and scale pale yellowish. Legs pale reddish straw-colour, the claws of the anterior pair, and the intermediate and posterior tarsi dark fuscous. Abdomen elongate-clavate, peduncle black, the first three segments, and the base of the fourth red, the rest black, the first is slightly contracted in the middle, and depressed above, with two black dots, one on each side of the medial line, the whole rather densely pilose. Length, 2½ lines.

♀. Head, thorax, and scutellum black, mouth black, prothorax with two deeply impressed lines ending at the base of the scutellum. Scutellum small, cordate, with a deep impressed line running round it. Antennæ, a fac-simile of those of the male, except that they are black; length, 1¾ lines. Wings ample, iridescent, stigma and nervures black, base pale, scale whitish. Legs bright red, anterior claws, middle tarsi, the base and apex of the posterior tibiæ, and tarsi, entirely black. Abdomen elliptical, peduncle shining black, with two longitudinal impressed lines, the first, second, and third segments red, the latter with a black fascia, the rest black, with their extreme apices whitish. Ovipositor black; length, ¾ line. Length, 2 lines.

This interesting species was bred from the pupa-cases of *Gyrinus natator*: the male came out either in the autumn of 1880 or early in 1881, as the pupæ were put into a box and were not looked at till the spring. The females were bred from pupæ collected this spring, and the insects came out in July.

I am indebted to the Rev. J. Hellins for these: he collected the pupa-cases of the *Gyrinus* on the heads of rushes and other water plants growing by the side of the Exeter Canal. I am somewhat at a loss to know at what stage the larva of the *Gyrinus* is attacked; I thought at first, when examining the male, it being so densely pubescent, that this species attacked the beetle-larvæ while still in the water, but now that I am acquainted with the female, and find that she is not so pubescent, I do not think this can be so. It is probable that the larva is attacked while ascending the stem of the plant, or, perhaps, when it has made itself a cocoon, as the female is provided with an ovipositor sufficiently long to pierce through the pupa-case.

The cases are made of the seeds or flower-heads, or any materials within reach of the little beetle-larvæ.

Exeter: ***August 4th,*** **1881.**

A NEW SPECIES OF *EUPITHECIA*.

BY THE REV. H. HARPUR CREWE, M.A.

Some three years ago I received from Mr. Ficklin, of Keynsham, near Bristol, specimens of *Eupithecia* which he had bred from larvæ taken the previous September, in North Devon, feeding in the seed-heads of *Jasione montana*. At first sight I was disposed to consider them a variety of *Eup. castigata*, and in this view Mr. Buckler, who also saw the specimens, concurred. I forbore, however, to give any definite opinion till I had seen the larva. The same autumn Mr. Ficklin again took the larva in North Devon, and very kindly sent specimens to Mr. Buckler and myself. We at once saw that they bore no resemblance whatever to the larva of *castigata*, but though smaller and stouter, most closely resembled that of *Eup. campanulata*. As, however, the perfect insect was entirely distinct from the latter species, I felt convinced it must be a species new to Britain.

Through the kindness of Mr. McLachlan the perfect insects have recently been carefully examined by Herr C. Dietze, of Baden-Baden, who probably knows more about Continental *Eupitheciæ* than any one else.

He is unable to identify Mr. Ficklin's insect with any known species, and considers it new to science.

With the consent, therefore, of Mr. Ficklin, to whom the whole of the discovery is due, I propose to name it:—

EUPITHECIA JASIONEATA.

In general appearance it closely resembles *castigata*, but the ground-colour is a much paler ashy-grey. The dark central lunule of the front wing is round, not narrowed, and before the hind margin there is a very conspicuous, almost uniformly broad, acutely angled, pale whitish line, which forms the most distinguishing characteristic of the insect.

Description of the larva:—

Short and stout. Ground-colour pale ochreous-brown. Central dorsal line dull olive-brown interspersed with lozenge-shaped spots of a similar colour, becoming confluent and merged in the dorsal line on the anal segments. Head blackish. Spiracular line indistinct, yellowish on each side, slanting brown markings. Whole larva wrinkled and rough and sparsely studded with yellowish warts and hairs.

Feeds in September on seeds of *Jasione montana*. Perfect insect appears in May.

Entomological collecting on a voyage to the Pacific.—[The following very interesting extracts from a letter addressed to the Rev. W. W. Fowler, have been handed to us by this gentleman for publication, which we have great pleasure in doing.—Eds.]

The ship left Plymouth on September 28th, 1880, and, after a very rough and disagreeable passage, anchored off Horta, in the island of Fayal (Azores), on October 6th. As we remained here six days, making good some slight defects, I was enabled to land and look about me a little: on one occasion reaching the "Caldeira," a vast extinct volcanic crater in the centre of the island, the lip of which is 3200 feet above the sea, and five miles in circumference. The scenery of the island is very beautiful, and the vegetation luxuriant and varied in the extreme, the loose volcanic soil being of very great fertility: the hedges of *Hydrangea* were in their full beauty for hundreds of yards, one mass of pink, blue, and white blossom: and ferns in wonderful luxuriance and variety. I did not, however, find insects particularly numerous —about 20 species of beetles, mostly *Harpali* and other familiar Geodephagous forms, a *Calosoma*, a prettly little variegated *Elater* related to *Cryptohypnus*, &c.; a large and curious Otiorhynchid weevil, *Laparocerus azoricus*, &c. Small moths, mostly *Pyrales*, were individually numerous, the most abundant being *Scopula ferrugalis*. *Leucania unipuncta* (*extranea*), so rare in England, was here the commonest *Noctua*: there were only three butterflies, *Pyrameis cardui*, *Pieris brassicæ*, and a *Satyrus*, like a small *S. Semele*: the latter appeared to occur only on the summit of the Caldeira.

Leaving Horta on the 12th, we visited the island of Flores, 120 miles to the westward, and stayed there two days, I went ashore once, but the weather was not favourable, and I got nothing that I had not found in Fayal. We finally left the Azores on October 16th, and reached St. Vincent, in the Cape de Verde Islands on November 1st, remaining here until the 6th. St. Vincent presents a very great contrast to the Azores, being as barren and forbidding in aspect, as they are fertile and luxuriant; the whole island looks like a vast heap of "clinkers" and brick-kiln refuse. Vegetation is scanty in the extreme, and what there is, is of a wretched weedy aspect. Two or three walks on shore yielded me a few Heteromerous beetles, two species of *Cicindela*, and a *Cleonus*, besides a nice series of a showy butterfly, *Danais Chrysippus, var. Alcippus*, and a few moths, of which the most noteworthy were *Deiopeia pulchella* (common), *Heliothis peltiger* and *armiger*, &c. We had a long and somewhat tedious passage of 30 days to Monte Video, our next port of call; the chief events which occurred to vary the monotony, were the capture of a couple of sharks (which were eaten by the ship's company, and pronounced exceedingly good; I tried a morsel of one, and found it by no means unpalatable), and the sight of a most gigantic cuttle-fish, floating dead on the surface of the sea, about 200 miles off the Brazilian coast. This creature (which resembled, on a colossal scale, the common calamary, or "squid," of the British seas) was at least 14 feet in total length, and weighed at least 3½ or 4 cwt.—a veritable sea-monster. We remained at Monte Video from December 6th to 12th. I found it a very interesting place, although the surrounding country is somewhat sandy and arid, with but few trees. I obtained a few species of beetles, including a conspicuous green *Phanæus* (a very fine genus of *Lamellicornes* related to *Copris*, &c.), some curious small *Heteromera*, and weevils, &c. Butterflies were very numerous, as regards individuals, but of very few species, and these were of a decidedly British aspect, with the exception of the large and conspicuous *Danais Archippus*. There are two species of *Pyrameis* (*Carye* and *Huntera*, the first being like a small and intensely coloured "Painted Lady"), a very handsome *Colias* (*C. Lesbia*), two handsome species of *Pieris*, a little dark *Thecla*, not unlike *T. pruni*, &c.; the moths appeared to be very few in number, but among them I recognised such familiar Britishers as *Stenopteryx hybridalis*, *Agrotis saucia*, and *Camptogramma fluviata*. Monte Video is a fine and well built town, of over 100,000 inhabitants, and altogether I was much pleased with my first sight of the New World.

We started again on December 12th, and, on the 23rd, entered the Straits of Magellan, and at 6 p.m. we were safely anchored off the little Chilian settlement of Punta Arenas or Sandy Point, 110 miles from the entrance. As it was necessary to coal ship, we spent Christmas day here, and did not leave until the morning of the 28th. I was thus able to enjoy, on Christmas day, a most delightful ramble about the surrounding country, which is very pretty, covered with a fine open forest of evergreen beech, and other trees, and abounding in beautiful wild flowers. Insects were numerous, and I obtained some 40 species of *Coleoptera*: among them were some that could scarcely be distinguished from familiar British coast species, such as *Broscus*, *Pogonus*, *Harpalus*, *Bledius*, &c.: while others had a very exotic appearance, and would scarcely have been suspected to come from so high a latitude as 53° S. Among these were a fine Prionid, with flabellated antennæ much longer than the body; a large and grotesque, spider-like, black Acalloid weevil; a fine Brenthid, some large weevils related to *Otiorhynchus*, &c., and one or two *Heteromera* of a very Mediterranean type. The *Lepidoptera* were of much more British aspect; three species of butterflies were represented; a charming little *Argynnis*, like a miniature *Lathonia* above, but very different beneath (being entirely destitute of silvery markings), was abundant; less so was a *Colias* (*Vautieri*, Guér.), of which the ♂ is very like a small *Edusa*, while the ♀ closely resembles *Helice* in tint and marking; a pretty *Pieris* was rare. The moths were represented by several *Geometræ*, among which were four species of *Lobophora*, one very beautiful species reproducing, on the fore-wings, the colour and markings of *Agriopis aprilina*; a fine Fidonid, related to *Scoria dealbata*, but sharply marked beneath with white streaks on a coffee-brown ground; a *Scotosia*, like a small *certata*, sundry *Cidariæ*, &c. The *Noctuæ* included a *Euclidia*, looking very like a mixture of our two Britishers, *mi* and *glyphica*; a *Hadena*, not unlike *glauca*, and an *Agrotis*, which, I think, is the widely distributed *A. fennica*.

Altogether I was very much pleased with my success at Punta Arenas, and would gladly have stayed some days longer. On leaving, we proceeded round Cape Froward, the southern extreme of the American Continent (a noble promontory), to the west end of the Straits, and then northward, through the passage known as Smyth's and Messier Channels, finally entering the Pacific Ocean, in the Gulf of Peñas, on January 8th. The scenery along the whole 600 miles of this route is most magnificent—I should say, unrivalled in the whole world: in some places the channel is less than 400 yards wide, the mountains rising sheer to the height of 3000 during the night, but anchored before sunset in some one or other of the many excellent harbours, I had occasional opportunities of landing, and, it is needless to say, enjoyed myself immensely in the primeval Patagonian forest. The beauty and luxuriance of these woods is most wonderful: the chief trees are the evergreen beech (*Fagus betuloides*), the aromatic Winter's Bark (*Drimys Winteri*), a species of cedar, &c., the whole matted together with a most dense undergrowth, among which the wild *Fuchsia* holds a conspicuous place. It is like scrambling through a quickset hedge, to try and get about among these woods, and the open places are covered with a dense coating of spongy peat, saturated with water, and worse to cross than an Irish bog! The woods are a real Botanical paradise, being full of the most lovely wild flowers, while the profusion of exquisite mosses, lichens, fungi, and small ferns, which find a congenial climate in this land of never-ceasing rain, would simply drive a Cryptogamist wild with delight. Insects are, however, not numerous. I only got two beetles, a fine Brenthid weevil, and a chafer related to *Serica*: in moths, the genera were almost all British, the one best represented being *Eupithecia*, of which I found some half a dozen species, one or two pretty *Tæniocampæ*, a *Cidaria*, very like *suffumata*, a *Scoparia*, a *Crambus*, a pretty olive-black *Camptogramma*, and one or two Micros. The great drawback to collecting, or even enjoying the glorious scenery, was the weather, which, although it was the height of summer in these southern latitudes, was most detestable—a succession of fierce storms of wind, rain, and sleet, the thermometer rarely rising above 50°. I do not think we had two consecutive hours without a shower after we left Punta Arenas, until we fairly got clear of the coast.

We arrived at Valparaiso, after a pleasant passage from the Gulf of Peñas, on January 15th, but we stayed here only four days, and the few insects I obtained were, with but one or two unimportant exceptions, identical with those I subsequently obtained at Coquimbo, where we arrived on January 21st, and remained until March 12th. This is a poor little town of about 6000 inhabitants, and the environs are very sandy and barren, with but a scanty vegetation in the best parts. Under irrigation, large crops of lucerne, &c., are grown, and these lucerne-fields produce many interesting insects. Some of them remind one forcibly of those found at home in similar places; thus *Colias Vautieri*, ♂, perhaps the commonest butterfly of the district, closely resembles our *Edusa*; *Pyrameis Carye* is a close mimic of *cardui*; a large sulphur-yellow *Callidryas* is a good imitation of our "Brimstone;" and some of the little skippers of the genera *Pamphila* and *Pyrgus* are very like our native species. The most conspicuous butterfly is a superb *Papilio* (*Archidamas*), a rich purplish-black insect, with a curved fascia of golden-yellow spots across all the wings, which are from 3 to nearly 4 inches in expanse: this beautiful creature is common, even in the town and on board the ship. Its larva, a fat, stumpy caterpillar of a deep madder-purple colour, with a double row of orange-red tubercles on the back, is very plentiful on a creeping plant, a species of *Aristolochia*, and it emits, in a concentrated form, the very disagreeable smell of its food; the pupa is often found attached to rocks, &c. Another very beautiful, but scarce, butterfly is the extraordinary Satyrid —*Argyrophorus argenteus*—of which the male is entirely of a vivid silvery-white above, glistening in the sun, as it flies along, like a sheet of burnished metal; while the female is as dull as the male is brilliant, being entirely a dull sooty-brown. Unfortunately, I have been able to obtain only this latter sex, for although I have seen four or five ♂, they have all managed to elude my pursuit. Among the moths, a fine *Deilephila* is conspicuous, in fact, almost the only showy insect to be obtained, though there are one or two pretty *Plusiæ,* with yellow hind-wings, besides our old friend *P. gamma.* The beetles are by no means as well represented as the *Lepidoptera*; though this is probably due to the fact that I was there at the very worst time of year, when everything is utterly dried up. A tiger-beetle, *Cicindela chilensis,* is the most abundant, as it occurs in myriads on the beach ; one or two large black Heteromerous fellows must be exceedingly plentiful at certain times of the year, to judge from the number of dead ones strewed about everywhere, though living ones I found by no means numerous : some smaller, but very curious beetles of this group (*Heteromera*), a few good-sized weevils, a *Buprestis,* one or two ordinary Lamellicorns, a *Calosoma,* a ladybird, and one or two cosmopolitan *Necrophaga,* almost complete the list of beetles. The Order *Hymenoptera,* owing to the sandy character of the surrounding district, is remarkably well represented, both in species and individuals, at Coquimbo.

We left this port on March 12th for Callao, where we arrived on March 31st, having called in at about a dozen small ports on the way, but made no stay at any of them—a few hours, or, at most, a day, as we did at Iquique. The whole coast from Coquimbo northward, nearly to the equator, is a desert, simply appalling in its utter barrenness : for hundreds of miles you sail along a range of high hills, rising steeply out of the water, of red volcanic rock, covered for hundreds of feet up their sides with drifts of loose white and yellow sand, and without even a blade of grass to relieve the awful sterility. Occasionally one of the snowy peaks of the Andes is to be seen, but, as a rule, this grand mountain chain is shrouded in an impenetrable veil of clouds. The ports on this coast are wretched places, mere collections of wooden shanties, filthy and squalid almost beyond description ; in many cases the water on which the inhabitants have to depend entirely, is all distilled from the sea, and is sold at the rate of about 3d. per gallon. I landed at Caldera (Chilé), Antofagasta (Bolivia), Iquique and Arica (Peru), but, of course, got no insects, except at the latter place, where a small stream of water supports a narrow strip of vegetation, a mere ribbon of green in the yellow waste of sand. Here I obtained a *Pamphila,* very like our *sylvanus,* in profusion ; one or two little "Blues," some small moths, a *Cicindela,* &c.

We arrived at Callao on March 30th, and have remained here ever since ; we shall probably leave for Panama towards the end of the present month. Callao stands on the edge of an extensive plain, all but level, with a scarcely perceptible rise towards the city of Lima, eight miles distant, and 500 feet above the sea-level. Behind Lima commence the foot hills of the Cordillera, which are very rugged and barren : the snowy summits of the main range are to be seen on a clear day. The plain is covered with a tolerably luxuriant vegetation, by no means, however, of a tropical character in general : willows, bulrushes, reeds, and other familiar marsh plants, remind one very much of England, and only here and there a clump of bananas, or a field of sugar-cane, sweet potatoes, or "yuce," a sort of Cassava (*Jatropha sp*), give a tropical aspect to the scene. The little river Rimac, which with a few conspicuous exceptions, partake of the general temperate aspect of the vegetation. Beetles are singularly scarce: I do not think I have found twenty species in all, and have been obliged to concentrate my attention on the *Lepidoptera*. A *Tetracha*, a *Scarites*, one or two *Heteromera* and a *Pentodon*, all scarce, except the first-mentioned, are the only conspicuous *Coleoptera*. In butterflies, I have as yet obtained 39 species, whereof no less than 17 are *Hesperidæ*, nine of these belonging to the genus *Pamphila*, three to *Pyrgus*, one *Nisoniades*, two *Eudamus*—very large, brown, tailed insects; the other two are also conspicuous "skippers," one measuring nearly two inches across, of a soft ochreous-brown hue, with darker fasciæ. There are eight *Theclæ*—some very pretty, but none as large as our *T. quercus*, and some very minute—a magnificent *Iolaus*, of a vivid blue colour above, widely bordered with black, the hind-wings with two tails. This beautiful insect, the ♂ of which is two inches across, is very common, and most conspicuous. The two species of *Polyommatus* respectively remind one of the European *Telicanus* and *Ægon*. The two fritillaries, *Agraulis moneta?* and *vanillæ*, most brilliantly spangled with silver beneath, are very conspicuous, and the latter is most abundant: the spiny larvæ of both species are to be found on "Passion-flower." *Pyrameis Carye*, and a pretty red and brown ocellated *Junonia* (*J. Lavinia*) are both common, and I have reared a good series of the latter from spiny black larvæ feeding on that cosmopolitan plant, *Verbena officinalis*. The delicately-coloured white and grey *Anartia jatrophæ* abounds in damp places, but I have as yet been unable to find out anything about its earlier stages. The tropical American genus *Heliconius* is represented by a very beautiful black and yellow species, which abounds in shady places; an ochreous and black *Acræa?* is locally common, and its pale brown spiny larva, gregarious when young, is to be found in plenty on a shrub of the Order *Compositæ*. The large and showy *Danais Archippus* is very plentiful, and its handsome larva, ringed with yellow, white, and black, feeds on the troublesome but pretty weed, *Asclepias curassavica*: the pupa is a very pretty object, short and stout in build, of a delicate pale green, with a few small spots on the thoracic portion, brilliantly gilded; there is a transverse golden line, edged with black, on the abdomen. *Callidryas* is represented by two species, one, the common sulphur-yellow Coquimbo species, *C. Statira?*, the other is a very handsome insect, the ♂ being of a vivid orange colour, the ♀ varying from deep orange to greenish-white, and having a marginal series of small black spots. I have reared it from a long, bright green, shagreened larva, not unlike that of our "Brimstone" butterfly, feeding on a large Leguminous tree, the "Paqui" (I think this is the well-known West-Indian Locust tree, *Hymenæa Courbaril*: it produces immense flat legumes, containing many large beans surrounded with a sweetish white pulp, which is eaten and very much liked about here). Two species of *Pieris*, one of which, the common Callao butterfly, is remarkable for the constant colouring of the ♂ (chalk-white, with a black tip to fore-wings), and the extreme variability of the ♀, which is sometimes almost like the opposite sex, and sometimes almost entirely greyish-black, intermediates of all shades being found; and a little yellow *Terias*, as yet unique to me, complete the list of Callao butterflies.

I have lately taken two very fine species of *Sphingidæ* in a gentleman's garden, at flowers at dusk: one is a magnificent fellow, 4¼ inches in expanse, of a beautiful soft rich green colour, the hind-wings varied with violet, yellow, green, and rust-red; the other is not unlike a small *S. convolvuli*, but it has the hind-wings rusty-brown, with a black border. There are two Zygænids: one (the commoner) is a very curious and pretty insect, entirely black, except a very large hyaline patch in each wing, and a large crimson blotch on the dorsal surface of the abdomen; the other belongs to the genus *Glaucopis*, and is a very brilliant creature, varied with crimson, steel-blue, and purple-brown, with the whole body glittering metallic-green. It flies high, and is difficult to catch, although not rare. The other moths are, with few exceptions, obscure dingy things, small *Botydæ* being especially well represented. I have found two pretty *Notodontidæ* (one, a pale brown, Cymatophorid-looking thing, being beaten abundantly in the larval state from the Paqui tree. From the same tree I have bred (from a large yellowish-grey half looper) a fine *Erebus ?*, nearly four inches in expanse, not unlike our *Mania maura* in aspect. *Noctuæ*, however, are decidedly scarce, and *Geometræ* still more so, though among the latter are one or two charming little "Emeralds," one of them a perfect miniature of our *Phorodesma bajularia*, only about half the size. The other Orders of insects offer little that is remarkable: the dragon-flies, caddis-flies, *Hemerobii*, &c., are remarkably like our own species. There are one or two fine *Empidæ*, and other *Diptera*, and some large and conspicuous *Pompilidæ*, *Sphegidæ*, *Vespidæ*, &c., besides a superabundance of mosquitoes, sand-flies, and other equally (or more) objectionable insects. Scorpions, three inches and upwards in length, are occasionally met with under stones, but the district is remarkably free from snakes; I have only seen one, and he was a harmless species.—JAMES J. WALKER, H.M.S. "Kingfisher," Pacific Station: *25th May*, 1881.

On the variable number of moults in larvæ from the same batch of eggs.—Last year I reared a few *Orgyia antiqua* from the egg, and what I then observed impressed me with the belief that the larvæ did not all moult the same number of times, but as I had not kept them separate I did not like to say anything about it in print. This spring I again found a batch of eggs, and securing the first four larvæ that were hatched I carefully separated and watched them, and made notes at once of every change that occurred, and these notes I now present in a tabular form.

	No. 1.	No. 2.	No. 3.	No. 4.
Hatched	24th May	25th May	26th May	26th May.
Moulted	4th June	2nd June	2nd June	2nd June.
Moulted	17th June	7th June	7th June	9th June.
Moulted	28th June	20th June	19th June	21st June.
Moulted	6th July	—	1st July	1st July.
Moulted	—	—	—	11th July.
Spun up	16th July	2nd July	13th July	22nd July.
Moth emerged	5th August ♂	20th—21st July ♂	25th July ♀	4th August ♀.

They were all treated alike, except that No. 2 had rather a smaller bottle, and No. 4 a larger bottle to live in, than Nos. 1 and 3, but these last had two bottles of precisely the same size and shape; the food was whitethorn, and they seemed to prefer that which came from our garden well flavoured with "blacks" from the surrounding chimneys. I fancy I somewhat disturbed No. 1 in his first moult, and

Eupithecia jasioneata.—I had the pleasure of breeding a long series of this species in June, 1878, from larvæ collected in September, 1877, at Valentia, South West coast of Ireland, by my collectors who were staying there at that time. The larvæ were feeding on *Jasione montana.* I shall not be likely to send for it again, being in such an out of the way place. I sent several specimens away as vars. ? of *castigata*; at the time I bred them I had not seen the larvæ.—E. G. MEEK, 56, Brompton Road, S.W.: *August 22nd*, 1881.

Drepanula sicula.—I have this year had the pleasure of renewing acquaintance with this moth, and have been able to supply most of my friends with bred examples. Although not so fortunate as I had hoped, still, another season, I trust to be enabled to supply all correspondents.—WILLIAM H. GRIGG, 31, Cotham New Road, Bristol: *August 1st*, 1881.

Rare Lepidoptera at Deal.—During a month's stay at Deal this year, I have had the good fortune to take 34 fine specimens of the rare *Nola centonalis*, and during August I have bred 24 splendid *Ennomos alniaria* (= *autumnaria*) from eggs obtained by a friend from a female moth captured on a gas lamp at Deal, and sent to me last autumn. Fortunately I have been able to secure fertilized eggs, so that I may hope to be able to supply friends with a great prize, *genuine British alniaria.*—W. H. TUGWELL, 3, Lewisham Road, Greenwich: *August*, 1881.

The influence of rain in the destruction of the larvæ of Charæas graminis.—In your Editorial review of my short note on the abundance of *Charæas graminis* at Clitheroe, you question whether the rains helped to clear the land of them, and suggest that the apparent diminution may have been caused by the retirement of the full-fed larvæ underground, in order to become pupæ. That your explanation is partially true is extremely probable. My informants, however, held that the rain had considerable influence on the disappearance of the caterpillars, and the accuracy of their belief is strengthened by the observation of Kollar, who says, "Continued rains, particularly when they occur about the last time of the caterpillars changing their skin, are sufficient to destroy them entirely, as was the case in the Harz territory" (Kollar on Insects injurious to Gardeners, English translation. London, 1840, p. 138).—WILLIAM E. A. AXON, Fern Bank, Higher Broughton, Manchester: *August*, 1881.

The genus Oporabia.—With the help of correspondents an attempt has been commenced to arrive at some definite conclusion as to the number of species of the genus *Oporabia* found in Britain, from an examination of the early stages: but whilst giving a short account of the few results already obtained, much more extended assistance is asked for, in order that the questions may have a chance of being satisfactorily settled.

From eggs of *dilutata* obtained last autumn at Pembroke, by Mr. C. G. Barrett, a good many larvæ were reared: Mr. Hellins took a large number of larvæ at Exeter during the spring: and Mr. Kay, of Bury, did his best, when applied to, almost too late in the season, to obtain larvæ in his neighbourhood, and succeeded in providing a few.

The larva of *dilutata* is well known to vary considerably in the amount of its markings, but nearly all the usual varieties were found among the examples from each of the above mentioned widely separated localities, and all agreed with the forms I have been accustomed to take at Emsworth, and with the descriptions furnished in Stainton's Manual and Newman's British Moths; I am still keeping the pupæ separate in different cages, and mean at the proper time to give the moths a full examination.

Mr. Kay, through Mr. Harwood's kind interest, also furnished a good supply of larvæ of *filigrammaria*, of which I had never before seen more than a single example: there does not appear to exist in this species anything like the amount of variation that we find in *dilutata*, and the larva, while exhibiting many points of resemblance to its congener, is abundantly distinguished from it, both in habit and in appearance.

Of any third species, so far, I have not been able to obtain an example, though Dr. Buchanan White some time ago, in his able paper in the "Scottish Naturalist" on the genus *Oporabia*, made a strong appeal for me: I wish now to repeat this appeal, and to ask Entomologists, especially in Scotland and the North of England, to try to procure for me during the autumn, a few eggs of all the species of this genus, which they are accustomed to take in their localities; particularly from those moths which fly in September.

Mr. Hellins is anxious to help in this investigation, as far as he can, by examining the eggs of each species under the microscope.—WILLIAM BUCKLER, Emsworth: *July* 13*th*, 1881.

Cosmia pyralina near Weybridge.—My friend Mr. McLachlan writes to me that, on August 2nd, he shook a specimen of *Cosmia pyralina* out of a plum tree in a garden between Weybridge and Guildford. The capture of this very local insect in a county from which it has not before been recorded, seems to me of great interest. —CHAS. G. BARRETT, Pembroke: *August*, 1881.

Notodonta cucullina.—Is it a common thing for *Notodonta cucullina* to be found outside Buckinghamshire? On Sunday, the 7th, myself and friend took four larvæ in a small copse on the road to the Gog-Magog Hills; and on Thursday, August 11th, we took nine, four full grown. I believe Mr. Greene took the pupæ at Tring, but I have seen no other localities except Halton.—T. E. SABINE PASLEY, Cavendish College, Cambridge: *August*, 1881.

Ichneumonidæ infesting larvæ of Gyrinus natator.—Last summer (1880), whilst fishing for carp in the Exeter canal, I was moved to collect some eight or nine small tough cocoons, which I found on the flags and rushes growing at the water's edge; most of these presently produced whirligig beetles, *Gyrinus natator*, but from two of them emerged, somewhat later, ichneumons.

Again this year, during the last week in June, I brought home a dozen of these cocoons, and bred (July 3rd—9th) six specimens of the *Gyrinus*, and afterwards (July 13th—27th) five ichneumons, not of one species only, but of three or four.

So far Mr. Parfitt has made out two species of *Hemiteles* (for one of which, being apparently unknown, he proposes the specific name *gyrini*), a *Pezomachus*

I am quite ignorant of the habits of the larva of *Gyrinus*, but it seems strange to find it preyed upon to such an extent, and by such a variety of parasites: perhaps some Coleopterist may be able to suggest the stage at which the latter may be supposed to find the greatest facilities for depositing their eggs; I can hardly fancy the *Hymenoptera* going under water for that purpose.—J. HELLINS, Exeter; *August*, 1881.

Rare Diptera in the New Forest.—I have been spending a week in the New Forest, and have taken, on July 1st, a female of *Ctenophora ornata*, Meig., one of the rarest of our Dipterous insects; the only other specimen that has been found in Britain was a male taken by my father (in company with the Rev. W. Kirby), likewise in the New Forest, on the 7th July, 1821. There is an admirable figure of it in Curtis's "British Entomology." I also took a specimen of another rare fly, viz., *Henops gibbosus*.—C. W. DALE, Glanvilles Wootton: *9th July*, 1881.

Sartena (Hagen, 1864) = *Neurorthus* (Costa, 1863).—The following remarks elucidate a point of synonymy concerning two genera (and species) of European *Hemerobiidæ* hitherto considered distinct.

In 1863 was published vol. i of the "Atti dell' Accademia di scienze fisiche e matematiche," of Naples, in which the second memoir is one by Prof. A Costa, intituled "Nuovi studii sulla entomologia della Calabria ulteriore." Amongst the insects described and figured is a new genus of *Hemerobiidæ* termed *Neurorthus* (*N. iridipennis*, Costa), p. 32, pl. iii, fig. 7. (This was foreshadowed, without name, in the "Rendiconti" of the same academy, vol. i, p. 125, 1862). In the same author's "Fauna del Regno di Napoli, Neurotteri, Aggiunte," p. 3, pl. xiii, fig. 4 (not fig. 3, as erroneonsly indicated in the text), 1871, the description and figure are reproduced.

In 1864 Dr. Hagen published in the "Annales Soc. Ent. de France," 4^me^ série, vol. iv, a paper, intituled "Névroptères (non Odonates) de la Corse," in which, at p. 41, the genus *Sartena* (*S. amæna*, Hagen) is characterized. It should be remarked that *Neurorthus* was omitted (and apparently overlooked) by Dr. Hagen in his "Hemerobidarum Synopsis Synonymica," 1866, although other genera and species noticed by Costa in his original memoir were included.

During a recent visit to Belgium I saw the types of *S. amæna* in the collection of my friend Baron de Selys-Longchamps, who generously presented me with one of them. These leave no doubt that *Neurorthus* is synonymous with *Sartena* (over which it has priority of one year), and in my mind there is also no doubt that *S. amæna* is identical with *N. iridipennis*.

But Costa, in a foot-note appended to his description of *N. iridipennis*, draws attention to *Mucropalpus fallax*, Rambur, Névroptères, p. 422, 1842, from Sardinia (*Mucropalpus*, Rbr., = *Hemerobius*, Auct.)—indicated by the author as an aberrant species (and of which I think the type no longer exists)—as closely allied to, if distinct from, *N. iridipennis*. According to the description, I am much inclined to consider it identical with *N. iridipennis* and *S. amæna*, and if this be proved, the insect will take the specific name *fallax*. If *N. iridipennis* (*S. amæna*) be proved to exist in Sardinia, I think there can remain no doubt on the point.—R. MCLACHLAN, Lewisham: *15th August*, 1881.

Reviews.

Bidrag till Nordvestra Siberiens Insektfauna. Coleoptera. Insamlade under Expeditionerna till Obi och Jenessei 1876 och 1877. Förtecknade af John Sahlberg. I. Cicindelidæ, Carabidæ, Dytiscidæ, Hydrophilidæ, Gyrinidæ, Dryopidæ, Georyssidæ, Limnichidæ, Heteroceridæ, Staphilinidæ, och Micropeplidæ. Med en Tafla. Stockholm, 1880, pp. 1—115, 4to.

This masterly work, published as a part of the "Kongl. Svenska Vetenskaps-Akademiens Handlingar" (Bandet 17, No. 4), consists of a synonymic enumeration (in Latin) of the species of *Coleoptera*, of the Families indicated, which were collected in the expedition to N.W. Siberia under Nordenskiöld. One new genus, *Nordenskiöldia (Staphylinidæ)* is characterized, and the number of species indicated is 750, whereof 78 are described as new. The author acknowledges the assistance of Dr. Sharp in working out the *Dytiscidæ* and that of M. Fauvel in the *Staphylinidæ*. The plate contains excellent figures of 18 species, of which 17 are new, including the *Nordenskiöldia glacialis*, of which 3 examples were found under pebbles, among ice, at the margin of a mountain rivulet. Independent of the interest that this work has as a record of the results of arduous enterprize in an inhospitable, slightly explored region, it has much value in the observations on little-known species, and especially in the synonymy generally, in which respect some of our British species are affected. The want of an Index is to be regretted; this, perhaps, may be supplied with part ii of the work.

Hemiptera Argentina enumeravit speciesque novas descripsit Carolus Berg (Curonus). Bonariæ, Pauli e. Coni.; Hamburgo, Frederking et Graf. 1879, pp. 1—316, 8vo.

The increased and increasing attention bestowed upon the collecting and study of *Hemiptera* is shown in the number of general and particular memoirs devoted to these insects which appear continually in Transactions of Societies, Journals, or separately. The volume now under notice is a collection of papers in scientific sequence previously published in parts of the "Anales de la Sociedad Cientifica," during the years 1878 and 1879, and constitutes a valuable addition to the knowledge of the *Hemiptera* of the Argentine Republic. The number of species enumerated is 384, namely, 268 *Heteroptera* and 116 *Homoptera*, in which are included many that are new, and a few new genera. It might have been surmised that an author writing in the native country of the species treated of, and far from European centres of information, would be at great disadvantage; but it appears that M. Berg has had the assistance of the late Professor Stål and Drs. Reuter, Mayr, and Spångberg, so he has doubtless escaped errors otherwise probable or unavoidable, and this care on his part enhances the value of his work, which we trust will become as widely known as it deserves to be.

Transactions of the Norfolk and Norwich Naturalist's Society, presented to the Members for 1880—81. Vol. iii, Pt. ii. Norwich: 1881.

We have on several previous occasions had the pleasure of noticing the publica interest, and most of the papers are valuable and lasting additions to Natural History literature. Entomology is not so well represented as usual, but there are notes by Mr. F. D. Wheeler and Mr. James Edwards. The former notices some of the rarer *Lepidoptera*, including *Margarodes unionalis*, taken at Yarmouth Denes: the latter records *Gastrodes abietis*, found by Lord Walsingham in spruce-cones at Merton.

THE BUTTERFLIES OF EUROPE: illustrated and described by Henry Charles Lang, M.D., F.L.S. Part i. London: L. Reeve & Co. 1881.

A good book in the English language, giving descriptions and figures of all the European Butterflies, was much wanted (we might say the same for the moths). Judging from Part i, Dr. Lang's work seems likely to supply the deficiency. The author proposes to briefly describe, and to figure, all the European species in about 20 monthly parts of 16 pages, and 4 plates each. The plates are drawn by the author, and coloured by chromo-lithography, and those in Part i (with the exception of one figure) strike us as excellent. The letter-press is occasionally open to improvement: for instance, why does the author father the terms "Palæarctic" and "Nearctic," as applied to faunistic divisions of the globe, upon Wallace rather than upon Sclater?

P.S.—We have since received Part ii, which is mainly occupied by the "whites," and which does not in any way cause us to change the favourable opinion expressed concerning Part i. Perhaps the least effective figure is that of *Aporia cratægi*. In the text not sufficient importance is given to the slight seasonal variations in the "cabbage-whites," on which our old Entomologists contrived to fabricate several species; an obvious slip occurs at p. 29, where a distinction is apparently drawn between "Tropœolums" and "Nasturtiums," but not the natural one.

ENTOMOLOGICAL SOCIETY OF LONDON: *July 6th*, 1881.—H. T. STAINTON, Esq., F.R.S., &c., President, in the Chair.

The following were elected, viz.:—George Henry, Esq., of 38, Wellington Square, Hastings, Member; and Mr. A. S. Olliffe, of 36, Mornington Road, Regent's Park, Subscriber.

Mr. W. L. Distant exhibited a ♀ *Morpho* which he believed to be that of *Morpho Adonis* of which the other sex was already well-known in collections.

Miss Ormerod exhibited elm leaves, from Islay, attacked by a larva probably belonging to the Coleopterous genus *Orchestes*; also specimens of a saw-fly larva from Rochdale, which had done much mischief in the meadows; this Mr. Fitch thought was a species of *Dolerus*, and he had observed a similar larva damaging meadow-grass in Essex.

Miss Ormerod also exhibited two other larvæ, one from Clitheroe, probably of *Charæas graminis*, and the other from Marlborough damaging the wheat.

The Rev. A. E. Eaton showed a series of drawings by Mr. A. T. Hollick, of larvæ of *Ephemeridæ*, one of which appeared to have the power of adhering to stones by its ventral segments like a limpet.

The Secretary read the report of the Committee on the parasite of the Locust, which they determined to be a species of *Bombyliidæ*.

Sir S. S. Saunders showed the imago and larva of the *Bombylius*, and egg-tubes of the locust; also a young live locust that had hatched out a few days before the meeting.

The following papers were read:—

Species of *Euchroma*, by Dr. Sharp.

Larva of *Nycteribia*, by Baron V. Osten-Sacken.

Observations on the Homopterous genus *Orthezia*, with a description of a new species, by J. W. Douglas.

Lepidoptera collected on the Amazons by Dr. Trail, by A. G. Butler.

Papilionidæ from Ecuador, by W. F. Kirby.

Descriptions of New Asiatic diurnal *Lepidoptera*, by F. Moore.

3rd *August*, 1881.—R. MELDOLA, Esq., Vice-President, in the Chair.

Miss E. A. Ormerod exhibited several bottles of *Coleoptera* and *Hemiptera* from South Africa.

Mr. Kirby exhibited, on behalf of Mr. Swinton, a specimen of *Iodis vernaria*, and read a paper from him on its method of oviposition.

Mr. Fitch exhibited an ear of wheat shewing the skins of *Aphis granaria*, which had been preyed upon by *Allotria*.

The following papers were read:

Description of a new genus of Hymenopterous insects (*Dyscolethes*), by Prof. Westwood.

New species of *Rhopalocera* from South Africa, by Roland Trimen.

Descriptions of new genera and species of *Lepidoptera* from Japan (*Geometrites*), by A. G. Butler.

Description of the female of *Papilio Adonis* and of Neotropical *Pentatomidæ* and *Coreidæ*, both by W. L. Distant.

Descriptions of new Longicorn *Coleoptera*, by C. O. Waterhouse.

LIST OF *LEPIDOPTERA* OBSERVED IN THE NEIGHBOURHOOD OF GALLIPOLI, TURKEY, IN 1878.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

(*Continued from page* 32).

Lycæna semiargus, Rott.—Very common in certain localities, and fond of frequenting grassy slopes. Specimens from the neighbourhood of Gallipoli differ considerably from those I have seen from other parts of Europe: they are larger, the eyes below are larger, and they have two or three obscure orange spots beneath, situated at the anal angle.

Lycæna Cyllarus, Rott.—Common, and occurred in the same localities as the above, and so similar in habits and appearance that I did not at first detect I was taking two species.

Limenitis Camilla, Schiff.—This beautiful species was by no means uncommon wherever its food-plant occurred. It is very graceful in its habits, and it was a pretty sight to watch several of them flying to and fro in front of a clump of honeysuckle growing on the outskirts of some wood. Occasionally they chased each other to a considerable height and disappeared amongst the topmost branches of the trees were several broods during the summer, and their transformations were completed with considerable rapidity. The first butterfly was noticed on the 26th May, and on the 29th of the same month, I watched a female depositing eggs; and on the 27th June, happening to be on the same spot, I searched the plant and found two chrysalids, one suspended from the under-side of a leaf, and the other from a twig, and a larva, not yet changed, suspended from a leaf. On 2nd July, these two chrysalids produced fine butterflies. The suspended larva changed the next day (28th June), and emerged 5th July, being thus only a week in the chrysalis state. On 28th July I took full-grown and very small larvæ, the latter are quite black, but the former, as far as I could remember, did not seem to differ from those of *L. Sibylla*. The chrysalids are much angulated, and resemble, in a remarkable manner, a shrivelled-up honeysuckle leaf. The last butterfly was observed on the 21st September.

Vanessa c-album, L.—Common, and much larger, and of a paler hue than English examples.

Vanessa polychloros, L.—Common in the Ak-y-lar valley, sitting on the trunks of trees, and among willow bushes in the shade; but was not observed very often on the wing. First seen on 13th June.

Vanessa Antiopa, L.—Very common in some localities, in the larva state, throughout May and June. On the 13th of June I took about three dozen full-grown larvæ; they had all changed to chrysalids by the 15th, and on the 26th all the chrysalids produced butterflies, and they are the largest examples I have ever seen of this species. It is strange that, notwithstanding the abundance of the larvæ in the early summer, I never saw a specimen of the perfect insect on the wing.

Vanessa Atalanta, L.—Common, but not abundant. Larvæ frequently taken between united leaves of mallow (*M. rotundifolia*, L., and *M. sylvestris*, L.), and wall pellitory (*P. officinalis*, L.).

Vanessa cardui, L.—Abundant in all its stages. Imagos noticed depositing eggs on thistle heads on 24th May, and on the 15th June the butterflies were out in immense numbers, frequenting thistle flowers. Throughout September, October, and November, the larvæ were plentiful between united leaves of mallow.*

Melitæa Cinxia, L.—Common, first observed on 23rd May. Turkish examples are larger, and of a deeper colour than British.

Melitæa Phœbe, Knoch.—Abundant, but local: first noticed, 23rd May. This species varies considerably, and my Turkish examples differ from specimens I have from Switzerland; they are probably Staudinger's variety *caucasica*.

Melitæa trivia, Schiff.—Abundant. First observed 26th May. A weak-flying insect, and easily captured, inhabiting marshy pastures and open spots in woods near streams. During early morning, and again just before sunset, it delights to sit, with expanded and gently vibrating wings, on a flower-head, and when disturbed merely floats in a dreamy manner to the next flower. They were very quiet in their habits, and did not appear to quarrel with other butterflies, though they were continually jostled off the flowers by *Melanargia Galathea* and *Larissa*, or *Hesperia Actæon*. The larvæ of this pretty butterfly were exceedingly plentiful at the end of June, feeding in society on *Verbascum*. The following is a description of the larva:—Length, 10 lin. to 1 in.; ground colour grey, or bluish-grey, with minute black dots

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* At Malta, in March, 1879, the larvæ were very abundant between united leaves of mallow.

and lines of black showing through; spines short, blunt, whitish, tawny at base, and ciliated with fine black and grey hairs, arranged in eights in a ring on all the segments, except the 2nd and 3rd, on which there are only six; the sub-spiracular spines are very minute; a narrow black dorsal line; an interrupted blackish sub-dorsal line; head reddish-brown, with a black dot on each side of the face; mouth black; legs very small, pale pinkish-grey; claspers of the same colour. Chrysalis short and stumpy; varies from pale bluish-grey to greyish-pink; a minute dorsal orange dot on each segment; a sub-dorsal row of orange dots, bordered above with black; a black dot above the spiracles, which are orange; all these dots are raised, especially the sub-dorsal row; six black dots on each wing-case; ten small black spots on head and thorax, and on centre of thorax; on each side of the dorsal line, is a crescent-shaped black line, bordered within with orange. The chrysalis is suspended by its tail to a pad of silk spun on the under-side of a leaf, twig, or stone, generally on the surface of the ground, and occasionally several larvæ spin a loose kind of web, in which they all change to chrysalids. The perfect insect appeared in about ten days, and there were several broods during the summer.

Melitæa didyma, O.—Abundant and more generally distributed than either of the other species of *Melitæa*. It was double brooded, the first brood appearing the 24th May, the second the 2nd August. It is an excessively variable insect, and the females vary far more than the males. As I write I have a series of 17 before me, and there are no two alike, and some of them are very beautiful, varying through different shades of bright fulvous-red to creamy-pink and greenish-brown.

Argynnis Daphne, Schiff.—On one or two occasions I noticed a fritillary flying among thick brushwood, but was unable to secure an example, and I believe it was this species.

Argynnis Lathonia, L.—Rare, I only captured two examples.

Argynnis Paphia, L.—Common in the valley of Ak-y-lar.

Argynnis Pandora, Schiff.—This grand species was rather scarce, and difficult to catch, as they were very strong fliers, and when once alarmed went off at a tremendous pace. They were very fond of the flowers of various kinds of thistles, and all the specimens captured were taken while they were regaling themselves on these flowers. There seem to be two broods, for the first butterfly was taken 13th June, and the last observed on 24th October.

Melanargia Galathea, L.—Very abundant.

Melanargia Larissa, H. *v. Herta*, H. S.—Very abundant in Ak-y-lar valley, and in the grassy plain near the Bulair lines, and very partial to the flowers of Scabious (*Scabiosa succisa*, L. and *columbaria*, L.). First observed on 4th June. A very variable insect.

Satyrus Hermione, L.—Very rare.

Satyrus Briseis, L.—Abundant. First observed 22nd June. Rather a troublesome butterfly to catch, for it was fond of alighting on bare ground among loose stones, where, closing its wings, it was difficult to see, and it generally rose just out of reach, and went off with its quick jerky flight. The males were far more

Satyrus Statilinus, Hufn., *var. Allionia*, F.—Common on the downs between Gallipoli and the valley of Ak-y-lar. First taken, 30th July; males more numerous than the females.

Pararge Roxelana, Cr.—Common, but local, the first specimens occurring on 6th June, in the valley of Ak-y-lar, in a shady spot by the side of the stream, where I noticed them settling on the trunks, and among the branches of willow trees. When disturbed, they did not fly far, and always alighted on a tree, or branch, and invariably with their heads downwards. All the examples taken on the 6th June were males, and no females were seen until a week or ten days later. I discovered a locality nearer Gallipoli than Ak-y-lar, where they were plentiful, and I was able to note their habits. During the heat of the day they seldom flew, and were only to be obtained by beating bushes, or examining the trunks of trees; but, late in the afternoon, when it became cooler, they might be seen flitting slowly along hedgerows, and occasionally pitching on a stone, and expanding their wings to the setting sun. The males were far more numerous than the females.

Pararge Mœra, L.—Scarce and local. Delighted to sit on the face of a rock, exposed to the full glare of the sun.

Pararge Megœra, L.—Abundant, and larger and brighter than British examples.

Pararge Ægeria, L.—Rare, only a few observed, and these, to my surprise, did not differ in any way from English specimens, for I had fancied that all south European examples possessed yellowish fulvous spots, as in *var. Egerides*, Stgr.

Epinephele Janira, L.—Very abundant, and varied considerably. First observed 23rd May.

Epinephele Tithonus, L.—Rare, 17th July, only one or two.

Cœnonympha Pamphilus, L.—Very common. Turkish specimens are much larger, and differ considerably in other respects from English examples. Some I captured measure 1 in. 6 lin. in expanse, and the upper wings are broadly margined with brown; and the under-side of the hind-wings, instead of being brown or grey, are of a uniform pale fulvous, with a marginal row of metallic blue spots. Another variety, of which I only obtained one, is almost white, with broad black margins. There were several broods during the summer.

Spilothyrus alceœ, Esp.—Common throughout the district from April until November. Larvæ were found between united leaves of the common mallow, where they were not difficult to detect on the stunted little plants growing among the stones on the almost barren spots where the perfect insects delight to live. The first I observed on 3rd August, but, unfortunately, during my absence for a week at Constantinople, they were neglected, and, upon my return, I found them all dead and shrivelled up. These would probably have produced butterflies the end of August. The next batch of larvæ were not obtained until the end of October; they fed up and became full grown early in November, when they spun open net-work cocoons in the corners of the breeding cage, or among dead leaves and débris at the bottom, remaining as shrunk-up larvæ until the middle of January, 1879, when some of them changed to short chestnut coloured chrysalids, with prominent black eyes, and covered with a slight purplish bloom. The following is a description of the full-grown larva:—Length, 11 lin. to 1 in.; cylindrical, tapering towards each extremity; slightly pubescent; head cordate, smoky-black, very distinctly separated from the second segment, which is very narrow, black, and bears three conspicuous gamboge-yellow wax-like spots, one dorsal, the other two sub-dorsal; whole of upper portion leaden-grey, thickly irrorated with transverse rows of black and white dots, but when the larva stretches itself in crawling, a faint fulvous yellow hue shows through, especially at the segmental divisions; an interrupted dorsal line somewhat darker; a pale sub-dorsal streak; spiracles minute, orange, with black pupils; ventral area smoky-black; feet black; prolegs and anal claspers smoky; lateral skinfold strongly developed. The young larvæ are smoky-black, with a small, but somewhat indistinct, black spot on each segment just below the pale sub-dorsal streak. These larvæ were terribly subject to the attacks of ichneumons.

Spilothyrus altheæ, Hb.—Common, though not quite so numerous as the preceding.

Spilothyrus altheæ, var. bæticus, Rbr.—Two examples only.

Syrichthus sidæ, Esp.—This fine species was very rare, and only two were seen and captured, on 25th May, near the Bulair Lines.

Syrichthus serratulæ, Rbr.—Common, but rather local.

Syrichthus malvæ, L.—Common.

Syrichthus orbifer, Hb.—Common, but local, only occurring in a certain ravine near the Bulair Lines.

Syrichthus Sao, Hb.—Very rare, only one example.

Nisoniades Tages, L.—Common.

Nisoniades Marloyi, B.—This species only occurred in one spot in the Ak-y-lar valley, where, on 3rd August, I secured a nice series, but, unfortunately, these were all destroyed while on the setting boards by minute red ants, while I was absent at Constantinople, and I had no opportunity of again visiting the locality.

Hesperia Thaumas, Hufn.—Abundant. First taken 1st June.

Hesperia Actæon, Rott.—Very abundant, the first appeared on 15th June, and they were very partial to flowers of different kinds of scabious.

Hesperia Nostrodamus, F.—I only obtained three or four examples, and they seemed to be difficult to get in good condition.

HETEROCERA.

SPHINGES.

Acherontia Atropos, L.—The larvæ of this species were very numerous throughout October and November.

Sphinx convolvuli, L.—Found a single larva on the 12th September, in a vineyard, on a plant of *Persicaria.* It turned to a pupa in a few days, and on 16th October produced a crippled moth.

Deilephila euphorbiæ, L.—Larvæ common early in July, and several perfect insects bred the following month.

Deilephila Alecto, L.—The larvæ of this fine species were very common in vineyards in September, and at times, I was told, they commit great ravages. The following is a description of a full-grown larva:—Length, 3 in.; when fully extended, 3 in. 6 lin.; head small and retractile within the second and third segments; fourth and fifth segments much swollen, giving the larva the appearance, when the head is withdrawn, of possessing a hood; remaining segments of almost uniform thickness; colour, a beautiful green, something the hue of a fresh vine leaf, irrorated more or less with darker green, and faint yellow-green spots, which seem to be placed just beneath, and show through the skin; dorsal line minute, dark green and pulsating; a pale yellow sub-dorsal stripe, bordered above by dark green; on the fifth to eleventh segments there is an oval-shaped ocellated spot, composed of an outer ring of pale yellow enclosing a bluish eye; these spots are most conspicuous on the fifth and sixth segments, but gradually die away towards the eleventh; their base rests on the sub-dorsal stripe; legs pale red; horn small, pinkish-brown, with black tip; spiracles minute, pale red. When full grown, the larva descends to the ground and spins a loose network cocoon amongst the débris on the surface, and in this changes to a pinkish-brown chrysalis. Some of these I brought to England in April, 1879, and they produced moths in June and July.

Smerinthus populi, L.—I noticed a number of larvæ of this species on some small poplar trees on 12th October.

Macroglossa stellatarum, L.—Very abundant. On 24th May, found a full grown larva feeding on *Galium verum*, and observed a female busily engaged depositing her eggs on the same plant. There was a succession of broods throughout the summer.

Macroglossa croatica, Esp.—This beautiful moth was common both in the perfect and larva stages. I first met with it on 17th May, and continued to see it almost every day until towards the end of September, so, no doubt there was a succession of broods. One day I noticed a female depositing her eggs while she hovered above a plant of Scabious (*Scabiosa arvensis*), and later on found the larvæ, of which the following is a description:—Length, 2 in.; cylindrical; head sub-ovate; dorsal area pinkish-purple; a broad, pale yellowish, sub-dorsal stripe, somewhat attenuated towards the anterior segments, and bordered with dark pinkish-purple above, runs from the second segment to the thirteenth, where it dies away at the base of the horn; spiracular and ventral regions pale pinkish-yellow, the yellow chiefly predominating below the spiracles, where it forms an indistinct and interrupted stripe; spiracles minute, deep orange; head, legs, and claspers pale pink; horn deep purple, faintly tipped with black, and with very small blunt white spines. The whole surface of the larva is thickly irrorated with minute white dots, which give it a somewhat roughened appearance. When full fed it becomes a beautiful magenta-colour, and the skin is smooth and glossy. A common variety of this larva is bluish-green, with a white dorsal line and indistinct whitish spiracular stripe, and covered with the same minute white dots. It spins a slight cocoon among dead leaves and débris on the surface of the ground, wherein it changes to a bright chestnut coloured shining pupa. These larvæ are terribly subject to the attacks of ichneumons, and I only succeeded in obtaining half a dozen healthy pupæ, from which but a single perfect insect was bred, in England, in June, 1879.

Ino ampelophaga, Bayle.—Common, flying among rushes on the sandhills near Bulair Lines.

In addition to the above, I obtained three other species of *Ino*, which, up to the present time, I have been unable to identify.

Zygæna pilosellæ (= *Minos*, Fuessl.), Esp.—Abundant, and particularly fond of the flowers of various kinds of thistles. Sometimes this and the following species were so thick on the flower-heads that there was positively no room for any other insect, and they would not budge one inch, although a score of *V. cardui* might be fluttering round them. These Turkish examples measure 1 in. 6 lin., whereas specimens I have from Ireland are barely 1 in. 3 lin.

Zygæna punctum, O.—Abundant with the above.

Zygæna filipendulæ, L.—Abundant, and differ rather from British types.

Zygæna sedi, F.—Very local, but common where it occurred. The cocoons of this species are white and glossy, and somewhat ovate shaped.

Zygæna læta, Hb.—This beautiful species was very rare, and only three were obtained.

BOMBYCES.

Lithosia caniola, Hb.—Very rare.

Emydia striata, L.—Common, flying freely in the hot sunshine. One example I bred has the fore-wings entirely pale ochreous, with two black dots just beyond the middle, and another, which was captured, has the hind-wings entirely black, with a very faint orange margin, this latter is probably the *var. melanoptera* of Brahm.

Deiopeia pulchella, L.—Scarce in the perfect state, but at Besica Bay the larvæ were very plentiful, feeding perfectly exposed in stubble fields on *Myosotis*, and, I think, *Anchusa* or *Lycopsis*, 10th September.

Callimorpha Hera, L.—Common, but local, and a very brilliant insect on the wing.

Arctia villica, L.—Common, flying by day in the hot sun, 24th May.

Arctia purpurata, L.—Three beautiful specimens bred from larvæ found feeding on *Galium verum* near the Bulair Lines.

Arctia Hebe, L.—Only one taken at rest.

Spilosoma fuliginosa, L.—Larvæ feeding on *Verbascum*, 16th November.

Spilosoma menthastri, Esp.—Larvæ common in September and October.

Cossus cossus, L.—Larvæ common on apricot, almond, mulberry, and other trees.

Orgyia antiqua, L.—Males common, flying in the hot sun.

Porthesia chrysorrhæa, L.—Larvæ abundant, feeding on various shrubs.

Porthesia similis, Fuessl.—This species was double-brooded, and the larvæ were excessively abundant.

Ocneria dispar, L.—Common, the males flying wildly by day.

Bombyx neustria, L.—Larvæ abundant.

Saturnia pyri, Schiff.—The magnificent larvæ of this fine species were full grown at the beginning of July, and were plentiful on pear, plum, walnut, almond, quince, willow, and other trees, and from their large size, and the manner in which they stripped the branches they were feeding on, could be seen at a long distance.

Phalera bucephala, L.—Larvæ common.

NOCTUÆ.

Diloba cæruleocephala.—Larvæ common.

Acronycta aceris, L.—At rest on plane trees, 3rd August.

Acronycta psi, L.—At rest on various trees, and larvæ on apricot, 12th October.

Acronycta rumicis, L.—Larvæ common on bramble, sorrel, &c., 5th November.

Hadena ochroleuca, Esp.—Common, sitting on thistle flowers during the day.

Polyphænis sericata, Esp.—Scarce, flying before the flowers of the *Berberis* during the day.

Leucania congrua, Hb.—One example.

Cucullia verbasci, L.—Larvæ abundant.

Plusia gamma, L.—Abundant.

Heliothis dipsaceus, L.—Rather scarce.

Heliothis scutosus, Schiff.—Scarce, and difficult to obtain in perfect condition.

Heliothis armiger, Hb.—Common, larvæ feeding in flowers of various kinds of thistle.

Acontia lucida, Hufn.—Rare.

Acontia lucida, Hufn., *var. albicollis*, F.—Rare.

Acontia luctuosa, Esp.—Common.

Thalpochares ostrina, Hb.—Rare.

Thalpochares parva, Hb.—Rare.

Agrophila trabealis, Sc.—Common.

Leucanitis stolida, F.—Rare.

Grammodes bifasciata, Petag.—Rare.

Grammodes algira, L.—Rare.

Catocala conjuncta, Esp.—Two examples.

Catocala hymenæa, Schiff.—One example.

Catocala conversa, Esp.—Common at rest during the day, on trunks of trees, walls, &c.

Spintherops spectrum, Esp.—The magnificent larvæ of this species were not uncommon on broom at the end of May, and their white cocoons, spun up among the terminal shoots, were most conspicuous. Mr. Stainton, in his Manual of British Butterflies and Moths, says that he nearly screamed with delight when he first saw the larva of *Calocampa exoleta!* I wonder if he has ever seen this larva, and if so, what effect it had upon him? for I think it is a far more beautiful and interesting creature, and I shall never forget the thrill of pleasure with which I first made its acquaintance. It seems a pity that such lovely larvæ should produce such dingy-looking moths.

GEOMETRÆ.

Phorodesma neriaria, H.-S.—One example.

Nemoria viridata, L.—One example.

Thalera fimbrialis, Sc.—One example.

Acidalia rufaria, Hb.—Common.

Acidalia subsericeata, Hw.—One example.

Acidalia ornata, Sc.—One example.

Pellonia calabraria, Z.—This pretty species was common on the downs between Gallipoli and the valley of Ak-y-lar, and flew readily in the day-time. The males far outnumbered the females.

Rumia luteolata, L.—A few examples.

Aspilates gilvaria, F.—Scarce.

Aspilates ochrearia, Rossi.—Common.

Aspilates strigillaria, Hb.—Common.

Sterrha sacraria, L.—Common and variable.

Lythria purpuraria, L.—Common.

Ortholitha cervinata, Schiff.—One example.

Ortholitha bipunctaria, Schiff.—Common.

Anaitis plagiata, L.—Common.

Cidaria fluctuata, L.—Common, bred.

Cidaria bilineata, L.—Common.

Cidaria sordidata, F.—Common.

Eupithecia oblongata, Hub.—Common, bred.

PYRALIDINA.

Cledeobia moldavica, Esp.—This striking species was excessively abundant in some localities on dry banks among withered herbage.

Cledeobia angustalis, Schiff.—Common.

Botys alborivulalis, Ev.—One example.

Botys cingulata.—Common.

Botys purpuralis, L.—Common.

Botys sanguinalis, L.—Common on the sandhills near the Bulair Lines.

Botys cespitalis, Schiff.—Common.

Botys ferrugalis, Hb.—Abundant.

Eurycreon sticticalis, L.—Rare.

Nomophila noctuella, Schiff.—This ubiquitous species was abundant.

Pionea forficalis, L.—Common.

Orobena frumentalis, L.—Scarce.

Margarodes unionalis, Hb.—Rare.

Crambus chrysonuchellus, Sc.—Common.

Pempelia semirubella, Sc.—Common.

Myelois cribrum, Schiff.—Common.

In addition to the species enumerated in this list, I have still several which I have not yet been able to identify.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ*.

BY R. H. MEADE.

(*continued from page* 65.)

5. LIMNOPHORA, Desv.

Gen. ch.—Eyes bare, contiguous or approximate in the males; arista slightly pubescent or bare; abdomen oval or conical, and always marked on the dorsum with four or six large triangular or sub-quadrate spots; alulets well developed, the under scale being longer than the upper; anal vein not reaching the margin of the wing.

1. COMPUNCTA, Wdm.
2. SORORCULA, Zett.
3. TRIANGULIGERA, Zett.
4. CONTRACTIFRONS, Zett.
5. SEPTEMNOTATA, Zett.

Several species of a widely different character have been included in this genus, which are only related to each other by having a very short-haired or nearly bare arista, and spotted bodies. Some of these, as *M. consimilis*, Fall., *M. litorea*, Fall., and *A. pertusa*, Meig., belong to the genus *Spilogaster*; while others, as *M. riparia*, Fall., and *M. triangula*, Fall., must be placed in the *Cœnosia* group, the eyes being widely separated in both sexes. I have thought it better to restrict the name *Limnophora* to a small and natural tribe, of which *A. compuncta*, Wdm., is the type. All in this group are of a black colour, with entirely black legs; more or less fuliginous wings; and with the second and third (and sometimes the first) abdominal segments each marked on the dorsum with two large triangular or sub-quadrate lateral spots, separated from each other by a straight, longitudinal, narrow grey stripe.

The species are mostly confined to the northern and mountainous parts of Europe, being more common in Scotland than in England; and on the continent, finding their chief home in Scandinavia.

L. COMPUNCTA, Meig.

Of this, the largest species in the genus, I have not seen an English specimen; but several were given me some years ago by Mr. Verrall, which had been captured by him at Rannoch in Scotland.

L. TRIANGULIGERA, Zett.

I captured several males of this species on the borders of Loch Katrine, in August, 1874, where it seemed abundant.

L. CONTRACTIFRONS, Zett.

Zetterstedt has described several species which are so closely related to each other, that it is very difficult to define them accurately. I have referred a single specimen to the present species, which I found in June, 1880, on very high ground on the borders of Rombald's Moor in Yorkshire.

L. 7-NOTATA, Zett.

This pretty little fly is the only one in the genus which is widely diffused, or at all common in England. I have found it both in Yorkshire and in the south. All the male specimens which I have seen belonged to the *b.* var. of Zetterstedt, having the alulets fuscous; a female which I captured together with a male in Askham Bog, near York, in September, 1880, had the alulets white, while those of the male were black.

6. HYDROPHORIA, Desv.

Gen. ch.—Eyes bare, contiguous or sub-contiguous in male; arista plumose or sub-plumose; alulets of moderate size, with the lower scale longer than the upper; abdomen conical, without distinct spots, and with projecting sub-anal appendages in male; anal vein prolonged to posterior margin of wing.

Sect. 1—*Legs entirely black.*

1. AMBIGUA, Fall.
2. DIVISA, Meig.
3. CAUDATA, Zett.

Sect. 2—*Legs partly pale.*

4. CONICA, Wdm.
5. BRUNNEIFRONS, Zett.
coronata ?, Zett.
6. LINOGRISEA, Meig.
7. ANTHOMYIEA, Rond.
8. SOCIA, Fall.

This genus is closely allied both to *Mydæa* and *Hylemyia*. It differs from the former by the species having the anal vein prolonged more or less distinctly to the margin of the wing, and by the abdomen being usually conical rather than oval, and furnished beneath in the males with large sub-anal appendages. It is distinguished from *Hylemyia*, to which it has been united by Schiner, by its higher degree of organization; the alulets in the principal species being of considerable size, and always with the scales of unequal length; while in *Hylemyia* they are small, and the lower scale is always covered by the upper one; the abdomen also in the latter genus is usually cylindrical rather than conical.

H. AMBIGUA, Fall.

H. DIVISA, Meig.

These species have been confounded together, though they are really very distinct. This confusion has arisen from their bearing a good deal of general resemblance, and from having been too briefly and imperfectly described; so that the description of

They may be distinguished by the following characteristics: the face is more prominent in *H. ambigua* than in *H. divisa*, and of a more brilliant silvery-white colour; the three longitudinal broad black stripes present on the thorax of both species, are separated by much more distinct white interspaces in *H. ambigua* than in *H. divisa*; and the sides of the thorax are of a more brilliant shining white colour in the former than in the latter. The scutellum is grey, with the apex shining black, in *H. ambigua*, while it is of an uniform grey colour in *H. divisa*. The abdomen has a longitudinal black dorsal stripe in both species, but it is much wider in *H. ambigua* than in *H. divisa*, and of nearly equal width in its whole length, extending over each segment to the apex. In *H. divisa* it is moderately wide over the first segment, but gradually becomes narrower, and terminates in a fine line, or becomes indistinct, at the hinder margin of the third segment. The apex of the abdomen is shining black in *H. ambigua*, but grey in *H. divisa*. The sub-anal appendages are very different in the males of the two species, affording very characteristic points of distinction; in *H. ambigua* they form a large projecting complicated hairy mass, under the third and fourth abdominal segments; while in *H. divisa* there are two long brown horny lamellæ, extending forward from the under-surface of the apex, and covering the rest of the male organs, which are much smaller and less hairy than in the former species. The third and fourth longitudinal veins of the wings slightly diverge from each other in *H. ambigua*, while they run quite parallel to each other in *H. divisa* as they approach the margin. The posterior tibiæ are ciliated on their outer and posterior surfaces with a number of long and short bristles of uneven lengths in *H. ambigua*, while in *H. divisa* there is a row of very short stiff hairs of equal lengths, extending along the whole outer surfaces of the tibiæ, and three long bristles in addition, one placed in the centre and one at each extremity of the tibia.

H. CAUDATA, Zett.

This species may be known from either of the preceding by its having two lateral tufts of hair, one on each side of the anus, on the under-surface, and another central tuft at the end of a projecting process, placed in front of the large hairy genital protuberance, beneath the penultimate abdominal segment. The abdomen is marked in the same way on the dorsum as in *H. ambigua*, but is more hirsute. The posterior tibiæ are armed as in *H. divisa*.

I captured several males of this species in 1874 on the margin of Lake Windermere; I have not met with it in any other locality.

H. BRUNNEIFRONS, Zett.

The female only of this species has been described; neither Zetterstedt nor Rondani knew the male. I found one female at Silverdale, Lancashire, in May, 1881, and have another which I found in a collection of *Diptera* made by the late F. Walker.

H. ANTHOMYIEA, Rond.

This well-marked and pretty species has not been noticed by any author except Rondani, who found it rarely in Italy. Herr Kowarz has met with it in Austria, and it is generally diffused and by no means rare in England; so it probably occurs in other parts of Europe, but has been overlooked.

It differs from all the other species in this genus by having the sides and undersurface of the two basal segments of the abdomen more or less testaceous in colour, and slightly translucent. The abdomen is cinereous, and has a longitudinal, tapering, black dorsal stripe, as well as a series of transverse black marks at the base of each segment, which are dilated on each side of the central stripe, so as to form six semilunar-shaped spots. The legs have the femora and tarsi black in both sexes, and all the tibiæ more or less testaceous. In some varieties the legs are almost black, and the yellow tinge at the base of the abdomen also indistinct.

The sub-anal appendages of the males are very complicated. Two long horny processes, with sharp points, extend forward from the under-surface of the anal segment, which are furnished with tufts of black hairs in the middle; they sometimes project downwards, the points being free and erected; at other times they are folded under two other membranous lobular bodies, which are placed under the penultimate segment and extend backwards.

H. SOCIA, Fall.

This is an aberrant species, the generic position of which is rather difficult to determine; the arista being short-haired, and the abdomen oval and depressed. Rondani (the latest authority on the *Anthomyiidæ**) placed it first in the genus *Anthomyia*, but afterwards removed it into the present one, to which it certainly belongs. It is not common.

(To be continued).

ON CERTAIN BRITISH *HEMIPTERA-HOMOPTERA*.

BY JOHN SCOTT.

(*Continued from p.* 67).

LIBURNIA V-FLAVA, *sp. nov.*

♂. Yellow. *Crown* yellow, as long as broad from in a line with the anterior margin of the eyes to the base, anterior margin rounded, next the basal margin a distinct fovea on each side adjoining the eyes, the triangular space in front between the keels reaching to the frons : *face* yellow, slightly dilated below the eyes: *antennæ* yellow, 2nd joint granulated.

Pronotum yellow, with a distinct but minute fovea in the centre on each side of the central keel, posterior margin arcuate : *scutellum* yellow, somewhat depressed at the base on each side of the central keel. *Elytra* yellow, reaching to the apex of the 6th abdominal segment, apex broadly rounded, nerves not granulated. *Legs* yellow : *claws* black.

Abdomen yellow : genital segment yellow, posterior margin viewed from the side nearly straight, viewed from behind broadish-oval, appendage yellowish-white, somewhat semi-oval, lower margin concave, upper margin inwardly on each side of the tube, and the lower angles very narrowly, black; processes yellow, V-shaped, upper margin narrowly margined with black and produced into a short tooth interiorly. Length, 1 line.

♀. Unknown.

This species stands between *L. flaveola*, Flor, and *L. concolor*, Fieb.

anal opening when viewed from behind, also by the shape of the processes ; and from the latter by the want of the granulation on the nerves of the elytra, the want of the black margins of the appendage, and also the V- (not U-) shaped form of the processes, with their black upper margin.

I only possess a single ♂ example, but without date of capture or locality.

DELTOCEPHALUS NORMANI, *sp. nov.*

♂. Pale brownish-yellow *Crown* pale brownish-yellow, with a whitish longitudinal central line, breadth across the anterior margin of the eyes about equal to the length; within the anterior margin a fine brown line extending from the apex almost to the eyes, at the base, on each side the central line, a small, somewhat square, brown spot, and adjoining the anterior margin of the eyes a paler, somewhat triangular one: *face* pale clear brown, with six to seven yellowish-white, short, slightly curved, transverse lines, and a short, pale, longitudinal central line at the apex: *clypeus* pale yellow: *rostrum* yellow, apex black.

Pronotum pale brownish-yellow, with a whitish, longitudinal central line; adjoining and running parallel with the anterior margin a pale yellowish-white, smooth collar, terminating in a line with the inner margins of the eyes, where it swerves into a straight line, terminating before reaching the lateral margins, posterior portion finely wrinkled transversely; posterior margin slightly concave, obtusely rounded at the extremities: *scutellum* pale brownish-yellow, with a short, shallow, transverse brown channel near the base. *Elytra* longer than the abdomen, pale brownish-yellow, nerves concolorous, central and the two inner apical areas milky-white. *Legs* pale yellowish or yellowish-white: *tibiæ*, 3rd pair pale yellowish, spines pale, set in black punctures: *tarsi*, 3rd pair dark brown, base and exterior margin of the 2nd and 3rd joints with a short whitish line.

Abdomen black, side margins very narrowly yellow; underneath, posterior margins of the segments narrowly yellow, posterior margin of the terminal segment concave; genital flap black, triangular apex narrowly rounded, margins yellow.

Length, 1½ line.

♀. Similar in colour to the ♂. *Crown* with the markings less distinct than in the other sex. *Elytra* shorter than the abdomen: *clavus*, nerves dark brown.

Abdomen: upper-side black, last segment orange-yellow, basal margin of the latter black, sides with a few stout, short, yellow hairs. All the other characters as in the ♂. Length, 1¾ lines.

I have compared this species with many of the late Dr. Fieber's in my possession, but cannot reconcile it with any of them; neither does it agree with any of the descriptions or figures given by him in his "Synopse der europäischen Deltocephali," published in the Verh. z.-b. Ges. for 1869, pp. 201—221. In colour it resembles *D. socialis*, and is also otherwise like it, but without the dark margin to the apical areas.

I have seen three specimens taken by Mr. Geo. Norman (1 ♂, 2 ♀) on "high heathery land in Morayshire three years ago."

Lee, S.E.: 12*th September,* 1881.

DESCRIPTION OF THE LARVA OF *SCOPARIA TRUNCICOLELLA*.

BY G. T. PORRITT, F.L.S.

In the second week of August last year, I received two batches of eggs of *Scoparia truncicolella* from Mr. George Jackson, of York, and Mr. J. B. Hodgkinson, of Preston, respectively. They were large and glossy, at first pale in colour, but soon changed to very bright red. They hatched in about a week, but before doing so changed to lead-colour, the newly emerged larvæ were red with shining black head. I immediately placed them in a flower pot where was growing a layer of the ordinary moss, which grows so abundantly on the sides of our garden walks, and in the bottom of our grass lawns. In this moss they disappeared, and I have no note on them until the end of October, when I found they were tunnelling the moss with silken galleries in all directions, thus proving they had made themselves perfectly at home. I then left them alone, outdoors, until the end of March, when I saw they were again feeding, and it became necessary several times after this to replenish the moss as it became eaten away. They were full-grown at the end of June, when I described them as follows:—

Length, nearly three-quarters of an inch; head a very little narrower than the second segment, it has the lobes rounded and the mandibles rather prominent; both it and the frontal plate highly polished. Body of nearly uniform width throughout, tapering only at the anal extremity; it is rounded above but rather flatter ventrally; segments very clearly defined, the divisions being deeply cut all round: the skin has a rather tough appearance, the polished tubercles large and prominent, and as usual there are a few short, but not very noticeable hairs.

The ground colour is a dingy dark olive-brown; head and mandibles dark brown, the frontal plate nearly black. (When younger the head is pale brown, with the mandibles and frontal plate darker sienna-brown). A dingy black pulsating vessel shows distinctly as the dorsal stripe; the hairs and tubercles black. Ventral surface similar to the ground of the dorsal area, the legs black. There are no other perceptible lines or markings, and the larva altogether is a very dingy looking creature.

For the most part they kept to their silken galleries in the moss, but on damp evenings were to be seen crawling over the surface, and were then very lively, and would wriggle about like the larvæ of a *Tortrix;* they seemed much more active than the rather stouter larvæ of *Scoparia muralis*.

They changed to pupæ in the moss, and the first imago emerged on August 6th, and was followed during the next fortnight by about thirty more beautiful specimens.

DESCRIPTION OF A NEW GENUS AND SPECIES OF *TENTHREDINIDÆ.*

BY W. F. KIRBY,

Assistant in the Zoological Department, British Museum.

PARASTATIS, *g. n.*

Wings and body as in *Tenthredo* (true); antennæ 8-jointed, joint 3 nearly twice as long as joints 1 and 2 together; and joints 5 to 8 forming a club, tapering at both ends; joint 4 being longer than any of the remainder, and gradually expanded; and joint 8 ending in a point. The club is about as long as the first three joints together.

Parastatis indica, sp. n.

Head black, coarsely punctured, clypeus and labrum nearly smooth, with a few scattered punctures, clypeus incised, yellowish, as is also the outside of the mandibles at the base; labrum with a longitudinal impression in the middle. Thorax and pectus black, punctured, segments of the abdomen blue-black in front, and yellowish behind, the last two segments almost entirely yellowish above, and blue-black below. Four front-legs yellowish, their femora and tibiæ, and the first two joints of the middle tarsi, blue-black on the outside. Hind-legs blue-black, with yellowish coxæ and trochanters. Wings yellowish-hyaline, with a strong violet iridescence, especially over a dark shade at the tip of the fore-wings, extending over the greater part of the radial cells, and a little below them; there is also a dark shade filling up the greater part of the first medial cell. Costa and stigma ochraceous, the latter blue-black at the base. Exp. al., 12 lin.; long. corp., 6 lin.

India (collected by Mr. Farr; precise locality not recorded).

A single female example is in the collection of Mr. F. Moore, to whom I am indebted for the permission to describe it. The insect is chiefly remarkable for the structure of its antennæ, which are quite different from any previously described form occurring among the *Tenthredinidæ.* A figure will shortly appear in Mr. C. O. Waterhouse's "Aid to the Identification of Insects."

British Museum:
September, 1881.

ON A NEW SPECIES OF *CHARAXES* FROM WEST AFRICA.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

We have recently received a small series of butterflies, chiefly *Charaxes,* from Accra, amongst which is the insect figured by Hewitson (Exotic Butterflies, vol. v, p. 40, pl. xx, figs. 22, 23) as the female of his *Charaxes cedreatis.*

As both figures of *C. cedreatis* evidently represent females of perfectly distinct species, and as the true male of Hewitson's *C. cedreatis,* ♀, is sent with the female by Mr. Carter, and proves to be an insect which has long stood in our collections as a probable variety of *C. Etheocles,* it will be necessary to give a new name to this species.

Charaxes Carteri, sp. n.

♀ *Charaxes cedreatis*, Hewitson, Exot. Butt., 5, p. 40; pl. xx, figs. 22, 23 (1876).

♂. Above, velvety-black, the primaries with diffused olive-brown border; a small sub-costal steel-blue spot beyond the cell: secondaries with a sub-marginal series of small greenish lunules with white centres; two bright blue sub-anal spots surmounted by white lunules; a sub-marginal lunated greenish line: fringe white-tipped; head chocolate-brown with four white dots, collar and tegulæ brown; thorax silky-black, abdomen velvet-black: under-surface exactly as in Hewitson's figure of the under-surface of the female, excepting that the oblique white belt (common to many females in this genus) is wanting, and the scarlet sub-marginal lines on the secondaries are less prominent. Expanse of wings, ♂, 2 in. 11 lin.; ♀, 3 in. 6 lin.

Accra (*Carter*). Type, B. M.

Hewitson's colouring of the outer border of the secondaries above does not perfectly agree with that of our specimen, being represented as salmon-tinted, whereas ours is greenish-grey, but curiously enough this very discrepancy in coloration occurs in two males of *C. Etheocles* in the Museum collection.

The female *C. Carteri* is, unfortunately, slightly damaged, but this is explained by Mr. Carter; he says:—"I fear none of them are very perfect; I am obliged to get natives to make captures for me, and my last employé complained that the 'spank of the wings was too brisk,' whatever that might mean, on my complaining that he hardly ever sent me a perfect specimen."

British Museum:
September, 1881.

Drepana sicula.—Through a persistent search amongst its food plant since the early part of August, I am glad to say I have been enabled to secure larvæ of this species, which have safely pupated. I have likewise to report a fairly successful result from eggs obtained from moths bred at the end of May last, so perhaps correspondents who have not hitherto received this species from me will take heart at the announcement. I attribute my ill luck this summer to an undue forcing of the pupæ, which previously I had not attempted, as on an examination the moths were found fully developed.—William H. Grigg, 31, Cotham New Road, Bristol: *17th September*, 1881.

Boletobia fuliginaria at Lewisham.—A specimen of this insect was taken in a cellar in Lewisham, on the 1st August, by a young man who works in my garden. The cellar had not been disturbed for some two or three years, and in a box in the cellar were two empty cocoons. Being in some doubt as to the insect, I sent it to Mr Weir for identification and this gentleman very courteously at once set my to tempt the occupant of the other cocoon with sugar, but I regret to say unavailingly.—Fred. W. Smith, Hollywood House, Dartmouth Point, Blackheath, S.E.: *24th August*, 1881.

Further captures of Boletobia fuliginaria.—Since writing to record the capture of a ♀ *Boletobia fuliginaria*, I am happy to say the *other two* I supposed to be in the cellar (having found their vacated cocoons), have both been captured. One has gone to Mr. Bond and the other I have. Both were females.—Id.: *27th August*, 1881.

Boletobia fuliginaria in London.—I have the pleasure of recording the capture of the second specimen this season of *Boletobia fuliginaria*, which was taken in the same warehouse, on the morning of the 25th ulto., as the one recorded by me on the 14th July (*ante* p. 68); this is a female, and owing to its late appearance and probably to having been out some little time is a little worn, but otherwise quite perfect.—J. R. Wellman, 219, Elm Park, Brixton Rise, S.W.: *September 6th*, 1881.

Plusia orichalcea in Pembrokeshire.—I am so fortunate as to be able to record the occurrence of a specimen of *Plusia orichalcea* in Pembrokeshire. I was collecting on a fine afternoon about the middle of July last, in a wild spot close to one of the branches of Milford Haven, when I saw it fly from one plant of bracken to another, and secured it without difficulty. It has been submitted to Mr. C. G. Barrett who has obliged me with its name.—James Malpas, H. M. Dockyard, Pembroke Dock, S. Wales: *27th August*, 1881.

Nonagria despecta in Pembrokeshire.—Being one day, early in August, in the extreme south-western corner of the county, and having half an hour to spare, I explored an attractive looking little strip of marsh lying below an extensive range of sand-hills near the sea. The place really *was* attractive, for in it *Anagallis tenella* actually carpeted the ground with its pale purple flowers, and *Samolus Valerandi* grew in plenty close by, with many common marsh plants, but attention was quickly drawn away from these by the appearance of a small whitish moth, flying like a *Crambus*, but with obviously broader fore-wings. This was *Nonagria despecta*—never before found, as far as I can ascertain, in any part of Wales, and, therefore, a most welcome discovery.

I worked over the ground—reviving the memory of old fen-land pleasures by tumbling headlong over a great "tump" of *Carex* into an abyss of black mud—and found that the *Nonagria* was tolerably common, though not plentiful, and its numbers were not greatly diminished by my visit.

At the same time I was much surprised to hear from Norfolk that *despecta*—which I used to see flying in hundreds, if not thousands, over the tall herbage at Ranworth Fen—has now become so scarce there, that hardly a dozen were seen in a week. This seems very extraordinary, they cannot have been exterminated by collectors, and no change in the condition of the Norfolk fens has taken place, and there is good reason to hope that this scarcity is only temporary and casual.

With it, in the little Pembrokeshire marsh, I found—as in Norfolk—*Acidalia immutata* and *Eudorea pallida*, but no other fen insect, not even *Crambus uliginosellus*, which certainly ought to have been there.—Chas. G. Barrett, Pembroke: *3rd September, 1881.*

Singular variety of Pieris napi.—Among the insects brought back from the Norfolk fens is one which deserves a separate and special notice—a ♀ ***Pieris napi**, entirely of a bright canary or sulphur colour.* It is one of the most exquisitely lovely insects that I have ever seen, its colour agreeing almost exactly with that of *Gonopteryx rhamni*, ♂, only with the addition of the soft shading of black atoms always present in *P. napi.* I have some very striking specimens of the *dark* varieties of this species (*bryoniæ* and *sabellicæ*), but have nowhere seen anything approaching the present specimen in *yellow* colour.

It was caught in company with a ♂ of the ordinary colour in tho fen, when the party were looking for *Papilio Machaon*, and Mr. Wheeler most generously sent it here for my collection.—Id.

Captures of Lepidoptera in the Norfolk fens.—My eldest boy having begun to make himself really useful as a young collector, has been encouraged in his exertions by an invitation from my friend Mr. F. D. Wheeler, to join in a boat-excursion on the rivers, broads, and fens of Norfolk, and some of his captures and observations are worth recording. Very little collecting was done in the day time, but it is gratifying to find that *Papilio Machaon* shows no sign of dying out, its larvæ being to be found in plenty. At night a fair number of moths came to the attracting lamps, but not the abundance that has been seen in former years. ***Lithosia muscerda*** was scarce, not more than a dozen being taken, and *Nudaria senex* not much commoner, though both species formerly occurred in abundance on the same ground. As with *Nonagria despecta* I think this only a temporary falling off, there being no permanent change in the conditions of their existence, and that they will probably in future years be as plentiful as ever. *Lithosia griseola* and its handsome variety *stramineola* seem to have been as common as usual.

Nonagria brevilinea, which for the last two years had scarcely been seen, occurred sparingly, and some very good specimens were secured. Other *Nonagriæ*, as well as *Leucaniæ*, were very scarce, only one *neurica* and two or three *straminea* and *pudorina* being obtained, but *phragmitidis* was not uncommon. *Spilosoma urticæ* and *Simyra venosa* were taken but rarely, as also was the case with *Notodonta dictæoides*, *Ptilodontis palpina*, *Tethea retusa*, and *Celæna Haworthi*. *Apamea fibrosa* and *Epunda viminalis* were commoner. *Geometræ* were not plentiful, but a series of *G. papilionaria* came in most satisfactorily to take the place of the faded specimens in the cabinet. *Ennomos erosaria*, *Collix sparsata*, and *Lobophora sexalata* occurred but sparingly. Among the swarms of *Abraxas grossulariata* one was taken with its fore-wings smeared along the costal region with black, and among the almost equally common *Epione apiciaria* was one in which the angulated first line of the fore-wings was placed nearly in the middle of the wing instead of near the base, and the broadly purple second line almost met it. The lovely white variety of *Hydrocampa stagnalis* olso occurred.

Schœnobius gigantellus and *mucronellus* were found, though not in great plenty, and a few *Crambus paludellus*, one specimen being of a beautifully pure white.

Peronea Lorquiniana seems to have fairly established itself in the Norfolk fens, its old haunts, it may be worth while to record that it occurs locally but not uncommonly in the Norfolk fens, sometimes being of unusually large size.

The trip was a great success—fishing, boating, rowing, sailing, even shell collecting in the day-time, moth collecting at night—happy circumstances to be a boy, and have some spare time!—Id.

Curious variety of Hepialus humuli.—Of the very few insects that have fallen in my way this season, one seems worthy of record. It is a ♂ of *Hepialus humuli*, found sitting one afternoon on a hedge bank, just emerged. The apical third part of its silvery-white fore-wings was distinctly tinged with delicate pink, not following any line or pattern but simply an extension over part of the wings of the lovely pink colour of the apical cilia. When alive the patch of colour was very distinct, but it is fading and in all probability will before very long disappear.—Id.

The ravages of the larvæ of Charæas graminis in Thuringia.—On the 14th of June last, the foresters informed me that, in a certain district of the Obergehren Forest, caterpillars, of which they sent some examples in spirits, had made great havoc in the pastures, and were so abundant that as one walked over the infested ground they crackled under foot. I recognised at once larvæ of *Charæas graminis*, and advised what could be done to prevent their ultimate increase, but I was unable to visit the place on the Rennsteig, about 2000 feet elevation, until the 28th June. The locality worst infected was a wood-clearing of about 90 acres; all the pasture had become entirely withered in consequence of the roots of the grass having been eaten by the caterpillars, whilst in other parts the vegetation flourished green. At the time of my investigation the greater part of the larvæ had become pupæ, the remainder were mostly ready to change, and only a few continued to feed. In a square foot I counted from 25 to 30 larvæ and pupæ, which gave for the 90 square acres 69,984,000 individuals. Single ones were also to be found in the adjacent clearings. I found school-children from the neighbouring villages busily engaged in collecting the larvæ and pupæ, and they received for them a mark per litre. Endeavours were made to stop the further spreading of the larvæ by making trenches into which the cattle were driven to trample on the larvæ and pupæ, and later on fires were to be made, whereby any developed moths should be destroyed. Altogether the forest officers did all that was possible to check the further spread of the insects; for this year in this place the grass was lost.

The moths first appeared on the 5th July; also their natural enemy *Ichneumon bucculentus*, Wesmael; but no *Tachinæ*. It remains to be seen what will happen in 1882; whether larvæ will invade neighbouring pastures in destructive swarms, or whether in consequence of the attacks of their natural enemies and by climatic influences the number of the insects will be reduced to normal proportion.—A. Gutheil. *(Condensed from the "Entomol. Nachrichten:" 1st September.)*

Capture of rare Lepidoptera and Homoptera in Herefordshire.—On the 30th August I captured, in Herefordshire, a pair of *Cerostoma asperella* and a series of *Psylla visci*.—C. W. Dale, Barmouth, North Wales: *September 2nd*, 1881.

A new mode of collecting Coleoptera, &c.—[The following is an abbreviated extract from an article on the results of an excursion in South Hungary]. I now mention a profitable way of beetle-hunting pursued by us almost daily. The method was entirely new to me, it may also be so to others, and may perhaps have similar results in other localities where railways go through woodland districts. The railway from Bogsan to Resicza runs continuously on the bank of the Berzava, often through forest; on the embankments the outer ledge of the rails is on an elevation, by which means the beetles will easily get over the rails and into the track, but their retreat is prevented by the concavity of the inner side of the rails, and they are caught in a trap, as in trenches with steep sides. In no other way can I account for the masses of bulky beetles in the said space; nor otherwise conceive for what purpose they had intentionally crawled between the rails. The greater proportion consisted of *Dorcadion æthiops* and *D. rufipes*, *Dorcus parallelopipedus* often in companies of 6 to 8 buried in the ground, *Gnaptor spinimanus* and other cursorial beetles, among which were *Carabus intricatus*, *C. repercussus*, also *C. Kollari* and *C. montivagus* singly. Further, *Herophila tristis*, *Acanthoderes clavipes*, *Hoplozia fennica*, *Mesosa curculionoides*, *M. nebulosa*, the last three scarce; but very plentifully *Timarchæ*, different *Chrysomelæ*, particularly *C. cærulea*, &c., were found. Standfuss made an eager raid on the cases of *Psychidæ* which had a predilection for hanging on the inner side of the rails.—E. VON BODEMEYER-HEINRICHAU (*in Entomol. Nachrichten: 1st September*).

Meligethes morosus, Er., a species new to Britain.—Among some doubtful *Meligethes*, which M. Fauvel kindly named for me some time ago, was a specimen of *M. morosus*, Er., a species not yet recorded as British: it apparently comes near *M. difficilis*, Heer, but is easily distinguished by its anterior tibiæ, which are much more evenly toothed than in that species; the teeth are much blunter, and increase in size to the apex, where there are two or three larger than the rest, though not conspicuously so, as in *M. difficilis* and other allied species; in shape it is shorter and more ovate than *M. difficilis*; its dark legs, as well as the teeth on the tibiæ, distinguish it from *M. ochropus*, to which it is somewhat allied by having its intermediate and posterior tibiæ strongly elbowed. I took my specimen in my garden in Lincoln, I believe out of a strawberry blossom.—W. W. FOWLER, Lincoln: *September 16th*, 1881.

Harpalus discoideus, F.—While collecting *Coleoptera* at Gravesend in July last, I took a single specimen of a *Harpalus* quite unknown to me. Mr. C. O. Waterhouse has kindly examined it for me, and pronounced it to be *Harpalus discoideus*.—H. B. PIM, Leaside, Kingswood Road, Upper Norwood: *Sept.*, 1881.

Choragus Sheppardi in Warwickshire.—From the bark of an old ash stump near Bidford I took, in July last, a few specimens of *Choragus Sheppardi*. The stump was full of insects of various kinds, and amongst others were the following species of *Coleoptera*: *Homalium punctipenne*, *Cephennium thoracicum*, *Scaphisoma agaricinum* and *boleti*, *Carcinops minima*, *Cryptarcha strigata*, *Triphyllus suturalis*, *Diphyllus lunatus*, *Litargus bifasciatus*, *Dorcus*, *Sinodendron*, *Clerus formicarius*.

Capture of Ceratocombus and Cryptostemma.—At the end of last July I found a specimen of *Cryptostemma aliena* amongst stones on the margin of Dowle's Brook in Bewdley Forest, and on a recent short visit to Matlock in search of *Stenus Guynemeri* and *Quedius auricomus* (both of which species I obtained) I found three specimens of *Ceratocombus coleoptratus*. They were on the under-side of bark lying on the ground in a damp place.—Id.

Notes on Hemiptera at Battle, &c.—During August I had the pleasure of working some parts of our district in company with four other local entomologists, Messrs. G. and H. Henry and E. P. and F. Collett. We confined our attention almost entirely to the immediate neighbourhood of Battle and to Dallington Forest, working principally at *Hemiptera* and *Coleoptera*. The larger *Hemiptera* were much more abundant than usual; besides plenty of *Tropicoris, Piezodorus, Picromerus, Myrmus, Gastrodes ferrugineus*, and larvæ and pupæ of *Pentatoma viridissima*, we took a few *Ælioides inflexus, Eurygaster maurus*, and *Corizus capitatus*, a considerable number of *Zicrona cærulea* and *Strachia festiva* and a few *Podisus luridus*. This latter was chiefly in the larval and pupal states, in which it is very handsome; one was observed sucking with great avidity a larva of *Piezodorus*, and by taking this hint and supplying them with such food, several were brought to the imago state. They seem, however, to be able to endure abstinence for a considerable time; one which remained without food for nearly a fortnight, at the end of that time performed its final change satisfactorily and seemed as lively as ever. This species was exceedingly local, being confined almost entirely to one damp corner of a wood close by a large pond near Battle. *Zicrona* was on one occasion found sucking *Adimonia capreæ. Cymus claviculus* occurred in all its stages under *Polygonum aviculare*, and another *Cymus*, which Mr. E. Saunders informs me is a variety of *C. glandicolor*, was extremely adundant in damp places by sweeping; we could not, however, associate it with any particular plant. In one damp spot *Monanthia humuli* was abundant, though there was but little *Myosotis. Dicyphus globulifer* occurred commonly on *Lychnis diurna*, larvæ and pupæ being present as well as imagos; I had also taken it in the same spot in May. By sweeping under fir trees a few *Macrolophus nubilus* were obtained, though no *Stachys* was near, and on Scotch firs we were pleased to find plenty of *Acompocoris alpinus* accociated with *A. pygmæus. Sphagnum* and other mosses yielded a few *Ceratocombus coleoptratus*, and *Chilacis typhæ* was found in profusion at Ashburnham on bulrush-heads. *Nabis brevipennis, Anoterops setulosus*, and two developed *Stygnocoris rusticus*, by sweeping, a pupa of *Ploiaria vagabunda* under fir trees, *Coranus subapterus* and *Triphleps niger* on heath, and *Dictyonota strichnocera* on furze bushes complete the list. Among *Coleoptera* the best takes were three *Mordella fasciata* and a single *Haplocnemus nigricornis*, the firs also yielded in some numbers the usual *Coccinellæ*, including *C. ocellata*. Mr. W. Bennett has just shown me a fine specimen of *Lamia textor* from Fairlight, near Hastings.—E. A. Butler, Hastings: *Sept.* 17*th*, 1881.

Aculeate Hymenoptera at Hayling Island and Bournemouth.—I had two days' collecting at Hayling Island about the middle of last month, and made the following captures that I think are worth recording:—

Astata stigma, ♂.—One specimen on the Sandhills to the East of the Island. This is the second time only that the ♂ has been recorded from this country.

Oxybelus mucronatus.—Several ♂ and one ♀ on thistles, *Euphorbia*, &c., on the Sandhills to the West.

Oxybelus mandibularis.—One ♀ in the same locality as the last. This is the first recorded capture of the ♀ in England. Mr. Bridgman, Mr. Dale, and myself have all taken the ♂.

Prosopis dilatata.—This rare species was not uncommon on *Euphorbia* flowers on the Sandhills to the West. The ♀ was much more abundant than the ♂, I expect I was too late for the latter sex.

Epeolus productus, Thoms.—I took one ♀ of this addition to our British fauna on the Sandhills to the West of the Island. On getting home I find I have two ♂ and one ♀ of the same species from Littlehampton, taken in a very similar sandy locality. It is rather larger than *variegatus*, and has the labrum in front sharply bidentate, and the tubercles on its disc nearer the middle than in that species. It also has two distinct round spots on each side of the second, third, and fourth abdominal segments. I hope to describe this species more fully in a coming number with several other new species that I have to bring forward.

After leaving Hayling Island I went to Bournemouth for a fortnight, but did not succeed in capturing any of the great rarities for which the place is celebrated. Everything seemed very much parched up, and *Hymenoptera* were certainly scarce in places were one would have thought that they would have abounded. I do not remember ever seeing localities so promising and which yielded so little when worked. The following are amongst my best captures:—

Mutilla europœa.—One ♂ and a few ♀, the ♂ taken basking in the sun on a bramble leaf about 9 a.m. *M. rufipes.*—One ♀.

Pompilus chalybeatus, ♂ and ♀; several.

Harpactus tumidus.

Oxybelus mandibularis, ♀.—On the Sandy Cliffs near Boscombe.

Eumenes coarctatus, off *Rubus.*

Andrena pilipes, ♂ ♀, *A. austriaca*, ♀, *A. decorata*, ♀, off *Rubus*. *A. nigriceps*, ♀, *A. tridentata*, ♀, off *Senecio*. *A. fulvescens*, ♀, off *Crepis*. *A. argentata*, ♂, abundant, skimming over the ground in Alum Chine, but I could neither find the ♀ nor the parasitic *Nomada baccata*—I presume that I was too early in the year for the former.

Halictus prasinus.—Several ♀ on *Erica*, but I was too early for the ♂.

Dasypoda hirtipes, ♂ ♀.—Pretty common.

Cilissa tricincta, ♂ ♀.—Pretty common.

Bombus Schrimshiranus, ♀ ☿.—Occasionally on the heaths and in the chines, but I was unable to get the ♂.—EDWARD SAUNDERS, Holmesdale, Upper Tooting: *August* 11*th*, 1881.

A brief notice of Carl Ludwig Doleschall, the Dipterologist.—My interest in the author of the "Bijdrage tot de Kennis der dipterologische Fauna van Nederlandsch Indie" was aroused by my studies of the fauna of the Malay Archipelago; however, all that I knew, until recently, about the circumstances of Doleschall's life was derived from the following sources:

(vol. i, p. 458, edit. 1869): "I had a letter of introduction to Dr. Mohnike, the Chief Medical Officer of the Moluccas, a German and a naturalist. He kindly offered me a room during my stay in Amboina, and introduced me to his junior, Dr. Doleschall, a Hungarian, and also an Entomologist. He was an intelligent and most amiable young man, but I was shocked to find that he was dying of consumption, though still able to perform the duties of his office. (p. 461) I enjoyed myself much in the society of the two doctors, both amiable and well-educated men, and both enthusiastic Entomologists. Dr. Doleschall studied chiefly the flies and spiders, but also collected butterflies and moths, and in his boxes I saw grand specimens of the emerald *Ornithoptera Priamus*, and the azure *Papilio Ulysses*, with many more of the superb butterflies of this rich island." Mr. Wallace's first visit to Amboina took place in December, 1857. 3. An interpellation by Mr. Ellenrieder in the Society of Natural History in Batavia (Natuurk. Tijd. Nederl. Indie, Batavia, 1859, Ser. iv, Deel vi, p. 239) about the fate of the scientific collections of Doleschall. He was told in reply, that an enquiry had been made, but without result.

Not long ago I had the good fortune to make the acquaintance of Dr. O. Mohnike, mentioned by Mr. Wallace in the above quoted paragraph, and it is to his kindness that I owe the details about Dr. Doleschall's life, which I am about to publish. Dr. Mohnike was Doleschall's chief and friend, and as such, is in possession of the most trustworthy data about him.

Carl Ludwig Doleschall was born on the 15th July, 1827, in Vag Jtjhelij in Hungary, and died in Amboina, February 26th, 1859, as "Officier von Gezondheid der tweede Klasse" (Health Officer of the second class, which answers to the rank of First Lieutenant). His father had been Protestant Minister in Hungary. Young Doleschall studied medicine in Vienna, but had, at the same time, to earn a living by giving lessons. Among his best friends, at that time, was Dr. Cajetan Felder, later Burgomaster of Vienna, known for his love of Entomology and his large collections of *Lepidoptera*. His son, Rudolf Felder (who also became afterwards known as a Lepidopterist, and died in 1871, at the age of 29) was one of Doleschall's pupils.[*]

After having obtained his Doctor's degree, Doleschall remained some time in Vienna, but left in 1852 for Holland, where, on the 4th of January, 1853, he found employment as Health Officer of the third class (Second Lieutenant) in the Military Medical Department of the Dutch East Indies. Sent to Java, he was at first employed in Ambarawa, later in Djokdjokerta, both military posts in Central Java. His residence in both places lasted two years and three months, whereupon he was called to Batavia, in order to pass an examination for a higher rank of service. Having been successful, he was promoted as First Lieutenant, and transferred, at his own request, to Amboina, in order to have better opportunities for his Entomological studies. The Chief of the whole Medical Department in the Dutch East Indies gave him a letter of introduction to Dr. Mohinke, the head of that department in the Moluccas, in which the latter was requested to allow Doleschall as much time as possible for his studies in Natural History. It was in Amboina that Doleschall wrote his three papers on *Diptera*, as well as those on *Arachnidæ*.

Doleschall was an excellent draughtsman and a good linguist; he could speak

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[*] About R. Felder and his father, compare a notice by Dr. Schiner in the Verhandl. zool.-bot. Ges., 1872. Their connection with Doleschall is also mentioned.

German, Dutch, Hungarian, Slavonic, Latin, Italian, and Malay. He was very much liked by all who knew him for his amiable temper, and his early death from consumption excited universal regrets among the European population of Amboina.

The three works, mentioned in Hagen's Bibliotheca Entomologica, are the only ones that he published about Entomology *sensu stricto.*

His other publications refer to different branches of Zoology, principally *Arachnida*, and will be found enumerated in Carus's Bibliotheca Zoologica, vol. ii, p. 1896—97. The following paper is not mentioned in Carus: Tweede Bijdrage tot de Kennis der Arachniden van den Indischen Archipel, with 17 plates (Acta Societ. Sc. Indo-Neerl., v; 4to, pp. 60, with 17 plates; Conf. Gerstaecker, Bericht, etc., 1862, p. 236).

Besides the above, I have seen a botanical paper: Korte Karakterschets der Flora van Amboina (Natuurk. Tijdschr. v. Nederl. Ind. Batavia).

Of the three "Bijdrage" on *Diptera*, the third is without plates. At the sale of Mr. Snellen v. Vollenhoven's library at the Hague, in October, 1880, a volume of the Bijdrage was sold, in which to the third part were added original, unpublished, coloured drawings by Doleschall. The volume was bought by Mr. Puls in Ghent. I possess a copy of these figures (44 in all), beautifully executed for me at the Hague, with the owner's kind permission.

Doleschall did not leave any Entomological collections of importance. I have been told that the little there was has been sent to his only Entomological correspondent, Dr. Felder, in Vienna. At any rate, the only *Diptera* of Doleschall's collecting, that I know of, are now in the Imperial Entomological Museum in Vienna.

I deem it a pleasant duty to express to Dr. Mohnike of Bonn, my sincere gratitude for the pains he has taken in satisfying my enquiries on the subject of this paper.—C. R. Osten-Sacken, Heidelberg: *July*, 1881.

Entomological Society of London: *Sept. 7th*, 1881.—H. T. Stainton, Esq., F.R.S., &c., President, in the Chair.

The President read a letter from the Colonial Office thanking the Society for the Report it had transmitted on the parasite of the locust in the Troad.

The Rev. A. E. Eaton exhibited a nymph of *Euthyplocia*, and read some notes respecting it.

Mr. E. A. Fitch exhibited a large mass of small Chalcids belonging to the family *Encyrtidæ*, of which hundreds (if not thousands) had emerged from a single larva of *Zeuzera æsculi.* He also exhibited pupæ and perfect insects of *Drosophila cellaris*, the larvæ of which had been found feeding in the pickled cauliflowers in a bottle of picalilli pickles. In another bottle of pickles the same larvæ had been found feeding in a great variety of pickled substances. He also exhibited galls of a new species of *Cecidomyiidæ* on the flowers of *Galium mollugo*, from Dorking; galls of *Cecidomyia foliorum* on leaves of *Artemisia vulgaris*; and galls of an unknown species found on *Thalictrum flexuosum* by Dr. Power in Scotland.

Mr. Fitch also exhibited an abnormal pupa-skin of *Bombyx mori*, from Mr. Kay Robinson, from the anterior end of which were protruding what appeared to be the

Mr. Billups exhibited six *Ichneumonidæ* new to Britain, including *Lissonota aneuris* from Weybridge, *Lissonota anomala* from Wickham, *Limneria litoralis* from Woking, *Pezomachus xylochophila* from Rainham, and *Pezomachus geochares* from Deal.

Sir S. S. Saunders exhibited larvæ of the Dipterous parasite of the locusts of the Troad, and read a letter from Mr. Calvert, from which it appeared that the locusts had been entirely destroyed by these parasites throughout an area of 80 square miles; the Dipterous parasites were themselves subject to the attacks of a parasite of the family *Chalcididæ*.

Mr. C. O. Waterhouse exhibited a common house-mouse from Peru, from a large swelling on the side of which had been obtained a larva of one of the *Œstridæ*. Mr. Verrall observed that no instance had been previously recorded of any *Œstrus* attacking the house-mouse. Mr. Waterhouse also exhibited three new species of *Coleoptera* from Sumatra.

The President exhibited specimens of *Charæas graminis*, received from Mr. F. S. Mitchell of Clitheroe; they had been bred from the larvæ which had swarmed so in that neighbourhood (see *ante* p. 39).

The following papers were read:

Dr. Baly, "Descriptions of uncharacterized species of *Eumolpidæ*."

Mr. A. G. Butler, "List of Butterflies collected in Chili by Thomas Edmunds."

Mr. C. O. Waterhouse, "Descriptions of some new *Coleoptera* from Sumatra."

A COMPARISON OF THE *PTEROPHORI* OF EUROPE AND NORTH AMERICA, SUGGESTED BY LORD WALSINGHAM'S "PTEROPHORIDÆ OF CALIFORNIA AND OREGON."

BY R. C. R. JORDAN, M.D.

(continued from page 76.)

To pass to the next genus, *Amblyptilus*, a pretty new species with a white ground to the wings is described under the well-chosen name of *Amblyptilus pica*; and *cosmodactylus* is described as very common and very variable. In England *cosmodactylus* is certainly quite distinct from the *acanthodactylus* of Hübner, which is a much more abundant insect, and by no means very variable. I must, in some years, have seen fifty specimens in an afternoon on *Ononis*, near the Warren at Dawlish, and all of them with the rich reddish hue on the forewings, utterly different from the almost greenish tint of *cosmodactylus*. The larva of *acanthodactylus* feeds on strongly smelling plants of various Orders: *Ononis*, *Pelargonium*, *Stachys*, and others; *cosmodactylus* generally affects the columbine; on the Continent, intermediate forms seem to occur. Our author, from the figures, did not meet the true *acanthodactylus* in his travels.

Of the pretty but difficult genus, *Oxyptilus*, four species are recorded, one of which only is new; one, O. *periscelidactylus* (not met with in Oregon or California), was first described by Fitch, and two others, *O. delawaricus*, and *O. nigrociliatus*, by Zeller in his "Beiträge zur Kenntniss der Nordamerikanischen Nachtfalter." The other, *O. ningoris*, Wlsm., is new, and seems to me more allied to *O. didactylus* than to any other European species.

Only one *Mimeseoptilus* is here mentioned, which is a new species, *M. exclamationis*, Wlsm. Prof. Zeller, however, in the work before mentioned, records two others from Texas, *M. semicostatus* and *M. pumilio*, this last seems an especially interesting little species, being only the size of *Lioptilus microdactylus*, and distinguished from all other *Mimeseoptili* "by the short and broad fore-wings, which are of a fawn-brown colour, marked with three very distinct black spots." The species described by our author is nearly allied to *M. coprodactylus*.

The *Œdematophori* are a very interesting addition to our known plumes. Four species are here described, *Œ. grisescens*, Wlsm., *Œ. gypsodactylus*, Fitch. (*creti*), *Œ. guttatus*, Wlsm., and *Œ. occidentalis*, Wlsm., and to these Professor Zeller adds a fifth, *Œ. inquinatus*, Zell., from Texas. Owing to the kindness of Lord Walsingham* two fine specimens of *Œ. grisescens* are now in my cabinet, and before me at the present time, but they seem to me so very closely allied to the European *Œ. Rogenhoferi* from the Tyrol, that I confess myself unable to separate them, it would seem that *gypsodactylus* is also very similar to this but paler in hue and smaller; *guttatus* and *occidentalis* are very different, both of much the same type as our native *lithodactylus*, but the former "whitish-cinereous dusted with small black scales towards the costa and on the dorsal surface, and with a conspicuous whitish spot at the base of the fissure;" the other, *occidentalis*, a rather larger species, having two varieties, one pale whitish-ochreous and the other paler. This is a very handsome insect, with the markings less distinct than in *lithodactylus*, yet the following extract from the description shows how close an ally it is to that species: "Fore-wings whitish-ochreous (more yellow than in *lithodactylus*), the costa and apex slightly shaded and the dorsal margin delicately tinged with pale fawn-colour, a dark fawn coloured spot before the base of the fissure *is more or less connected obliquely with an elongated spot of the same colour on the costa beyond it.* The cilia are delicately tinged with very pale fawn-colour." The larva of this species was found on the leaves of a "sun-flower," so that like its English more allied to *Rogenhoferi* in colour, since the fore-wings are "of a dirty grey, plentifully sprinkled with white and brown scales so as to form here and there spots or streaks." *Pterophorus monodactylus* is distributed in America as in Europe; according to Staudinger, it extends into Armenia; it is, therefore, one of those species whose range in the Northern hemisphere is very wide indeed. The chief interest attached to it here is that our author records the two well-known European varieties, the one fawn-brown, the other with the fore-wings of a pale grey, sprinkled with darker spots and streaks.

The *Lioptili* are well represented, ten species being here described, of which six are new to science, one, *L. paleaceus*, having been before described by Zeller, one, *L. sulphureus*, by Packard, and two others, *agraphodactylus* and *homodactylus*, by Walker: the type-specimens in the British Museum enable these last two to be identified. In a genus where all the species are so closely allied it is useless to make any enumeration, the most notable, as far as beauty of colouring is concerned, are *L. sulphureus* and *L. helianthi*, the former a large species much bigger than our *L. osteodactylus*, expanding 25 mills. and having the fore-wings a bright sulphur-yellow; the latter, *L. helianthi*, resembling somewhat a very large and brightly coloured specimen of *Lienigianus*. *L. homodactylus* is whiter than any European form, but the most remarkable of the group is a new species, *Lioptilus parvus*. The palpi in this are described as "long, well clothed, sharply pointed, and twice the length of the head," this is certainly very different from the usual palpi of *Lioptilus*, which we may define as "shorter or slightly longer than the head, delicate, pointed, almost cylindrical, with the third joint sometimes drooping." Our author has, however, acted wisely in not creating a new genus for his single specimen, but in merely indicating the divergence; it is a small species with the fore-wings "dusty grey sprinkled with fuscous scales."

In the genus *Aciptilus* there is a great falling off in the number of species, as compared with those of Europe, and in these there is an evident tendency to an aberration from the type-form. Three species are given, all of which are now before me: two of these seem undoubted *Aciptili*, the first, *A. cinerascens*, Wlsm., is very similar to *L. Lienigianus* in colour and size, the other, *A. montanus*, Wlsm., is about the size of *A. paludum*, but is white with brown scales, and a costal streak of the same colour; the third, *A. californicus* is a most remarkable insect, with the wings of an *Aciptilus* but the colouring of an *Oxyptilus*, and with the same "tuft of projecting scales in the fringes of the third lobe of the hind-wings." Our author says, "its nearest European ally is *A. siceliota*, Zell." The three *Aciptili*—*A. paludum*, *A. siceliota*, and *A. baptodactylus*, have very much in common with each other, so that they at least form a very distinct section of *Aciptilus*, and certainly there is much resemblance to this species in the group, but none of them have the tuft of projecting scales. Although the inferior lobe of the fore-wing in *Oxyptilus* is truncate, with a concave margin, yet this is not equally shown in all species, it reaches its greatest development in *O. didactylus* and *O. ericetorum*, also in the *O. ningoris* of the present work, but it is much less marked in *O. Kollari*, and still less so in the *O. rutilans* of St. Helena; none of them have, however, the simple pointed feather of an *Aciptilus*, such as is found in *A. californicus*. It is an undoubted link between *Oxyptilus* and *Aciptilus*, and very possibly may hereafter modify the classification of the plume moths.

The last of the *Pterophoridæ* recorded is *Trichoptilus pygmæus*, Wlsm., a species near to the last, yet so aberrant, that a new genus had to be formed for its reception; saving in the tuft of scales on the third feather of the hind-wing, its wings are the wings of an *Aciptilus*; but its palpi are longer, the third joint not drooping and not more slender than the second, "the posterior tibiæ are thickened at the base of the spurs, and ornamented above them with erect brush-like tufts of scales." It was impossible for this to be called an *Aciptilus*, and so the necessity for the new genus was undoubted; it is the least of all the plumes yet known, and expands only ten millimètres; its anterior wings are "pale fawn-colour, dusted with fuscous-brown scales along the costa." These last two are without doubt the most interesting of the plumes discovered.

Prof. Zeller records a most remarkable genus of plumeless *Pterophoridæ* from Texas; it does, indeed, as its name states, "laugh at laws." It seems the very *Archæopteryx* of the plumes, with entire wings, no naked unfeathered space as in *Agdistes* to mark where the fissure should be, and with distinct ocelli; *the hind femora being shorter than the tibiæ, seem almost the only feature which makes it a plume and not a *Pyralis*; two species are described, *Scoptonoma integra* and *S. interrupta*.

In this paper, as far as possible, species have been dealt with rather than genera, and all reference to classification has been strictly avoided; this subject has not, however, been out of my thoughts, and it is my hope to return to it at no very distant date

Amongst the *Alucitina* our own common *Alucita hexadactyla* (Linn.) is the sole species recorded as found in Oregon. It is the only unsatisfactory figure in the book, the plates of which are with this exception uniformly excellent.* The letter-press is also good, and the work is "got up" in a style every way satisfactory.

In conclusion, the following table of European and North American plume-moths (*Pterophoridæ* proper) is appended, the British species being in italics:—

Palæarctic Region.	*Neartic Region.*
AGDISTIS	SCOPTONOMA
frankeniæ	integra
meridionalis	interrupta
Heydenii	
manicata	
adactyla	
tamaricis	
var. paralia	
Bennetii	
CNÆMIDOPHORUS	
rhododactylus	
cinnamomeus	
PLATYPTILIA	PLATYPTILIA
capnodactyla	Bischoffii ?
ochrodactyla	cervina ?
Bertrami	Bertrami
isodactyla	adusta
gonodactyla	grandis
farfarella	cardui
Zetterstedti	percnodactyla
nemoralis	albida
saracenica	orthocarpi
tesseradactyla	albidorsella
Metzneri	shastæ
	fragilis
	albiciliata
	modesta
	petrodactyla
AMBLYPTILIA	AMBLYPTILIA
acanthodactyla	pica
cosmodactyla	cosmodactyla
OXYPTILUS	OXYPTILUS
Kollari	periscelidactylus
tristis	delawaricus
distans	nigrociliatus
lætus	tenuis (dactylus) ?
pilosellæ	ningoris
hieracii	
teucrii	
OXYPTILUS	
maculatus	
ericetorum	
didactylus	
Hoffmannseggii	
obscurus	
marginellus	
Bohemani	
MIMÆSEOPTILUS	MIMÆSEOPTILUS
Ehrenbergianus	exclamationis
agrorum	semicostatus
rhypodactylus	pumilio
phæodactylus	
miantodactylus	
pelidnodactylus	
serotinus	
var. aridus	
zophodactylus	
islandicus	
coprodactylus	
Nolckeni	
plagiodactylus	
lutescens	
graphodactylus	
pterodactylus	
paludicola	
stigmatodactylus	
Mannii	
ŒDEMATOPHORUS	ŒDEMATOPHORUS
lithodactylus	gratiosus
Constanti	cineraceus
giganteus	Baroni
Rogenhoferi	guttatus
	occidentalis
	inquinatus
	ambrosiæ
	gypsodactylus (creti)
	grisescens
	lugubris

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* Our English works on *Lepidoptera*, of which this can be said, are few indeed; it would be well if our authors would remember that a good description is ever useful, a bad plate is only a delusion and a snare. Why cannot we have a work on Palæarctic *Lepidoptera* like Dresser's birds?

Palæarctic Region.	*Nearctic Region.*	*Palæarctic Region.*	*Nearctic Region.*
Pterophorus	Pterophorus	Aciptilia	
monodactylus	monodactylus	volgensis	
Leioptilus	Leioptilus	subalternans	
scarodactylus	Mathewianus	xanthodactyla	
Lienigianus	sericeus (dactylus)	xerodactyla	
tephradactylus	paleaceus	decipiens	
distinctus	stramineus	icterodactyla	
inulæ	angustus	taphiodactyla	
chryocomæ	inconditus	*baliodactyla*	
carphodactylus	agraphodactylus	calcaria	
microdactylus	sulphureus	parthica	
coniodactylus	homodactylus	*tetradactyla*	
pectodactylus	nævosus (dactylus)	malacodactyla	
osteodactylus	subochraceus	chordodactyla	
brachydactylus	helianthi	ischnodactyla	
	Belfragei	desertorum	
	grandis	olbiadactyla	
	Kallicotti	nephelodactyla	
	? parvus	*pentadactyla*	
Aciptilia	Aciptilia	*paludum*	
semiodactyla	cinerascens	siceliota	
galactodactyla	montana	*var.* ononidis	
spilodactyla	lobatus(lobidactylus)	baptodactyla	
phlomidis	? californica		Trichoptilus
confusa			pygmæus
caspia			ochrodactylus*

A few words of explanation must be given as to the changes in this list of British plumes since that published in 1869.

The *Oxyptilus* caught near Thetford† and in other parts of our Eastern counties is changed from *lætus* to *distans*. There is no doubt about this. Prof. Zeller first pointed out the mistake to me several years ago : *lætus* is a smaller insect, and, indeed, very different.

Oxyptilus pilosellæ is the "Mickleham plume ;" no native specimen of *O. hieracii* has ever come under my notice.

Mr. Barrett, it seems to me, satisfactorily proved *Mimæseoptilus aridus* to be only a variety of *M. serotinus*. *M. Hodgkinsoni*, it is sadly to be feared, is only a form of *zophodactylus*.

M. plagiodactylus deserves investigation, the small bright-looking form of the Lake district (*scabiosæ*, Gregson) is at first sight very different from the German specimens, which have a much larger blotch on the costa, but the "plagium" is distinct in both.

Unfortunately, no new *Pterophorus* has been added to the list.

105, Harborne Road, Edgbaston, Birmingham:
July 6th, 1881.

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* I am afraid that the names *Leioptilus grandis*, Fitch, *Œdematophorus cineraceus*, Fitch, and

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ*.

BY R. H. MEADE.

(*continued from page* 104.)

7. HYDROTÆA, Desv.

Onodontha, pt., Rond.

Gen. ch.—Eyes either hairy or bare, contiguous or sub-contiguous in males; arista pubescent; alulets well developed, with unequal scales; abdomen mostly oval; wings with anal vein not prolonged to the margin, and with third and fourth longitudinal veins mostly curved slightly towards each other at their apices; legs with anterior femora of males always toothed at their extremities, and fore tibiæ attenuated or notched at their bases.

Sect. 1—*Eyes hairy.*

1. CILIATA, Fab.
   spinipes, Fall. & Zett.
2. OCCULTA, Meig.
3. CYRTONEURINA, Zett.
   silvicola, Loew.
4. IRRITANS, Fall.
   dentimana ?, Meig.
   meteorica, Macq.

Sect. 2—*Eyes bare.*

5. DENTIPES, Fab.
6. PALÆSTRICA, Meig.
7. RONDANII, *sp. n.*
8. METEORICA, Lin.
9. ARMIPES, Fab.
   floccosa, Macq.
10. FASCICULATA, *sp. n.*
   armipes ?, Macq.

Rondani separated the species of this genus which have hairy eyes from the others, and placed them in a separate genus, which he named *Onodontha*; and I formerly adopted his arrangement, but there are no other characters by which the separation can be supported, and in the most common species of this group, viz., *H. irritans*, which Rondani retained in the old genus, the eyes of the males are always more or less pubescent or short haired, so it is far better to keep them all together. The species are not numerous, and are united by strong natural characters, the fore legs of the males being always toothed, and the middle and hind ones often furnished with peculiar spines or tufts of hair.

H. CYRTONEURINA, Zett.

This species bears a strong general resemblance to *H. dentipes* and its congeners, having the third and fourth longitudinal veins of the wings convergent (whence its name); but it may at once be distinguished from *H. dentipes* by the eyes being distinctly haired. It appears to be a rare British species, as I have only seen one which was sent to me by C. W. Dale, Esq., of Glanvilles Wootton, Dorset, for inspection.

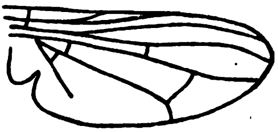
H. IRRITANS, Fall.

This common species abounds everywhere in England; the females swarming in woody places, especially in warm damp weather, when they cause much annoyance both to horses and men. Macquart confounded this species with the *M. meteorica* of Linnæus, which is a very different and much less common species, at least in Britain. *H. irritans* may be distinguished from all the other species in this genus by having the arista sub-plumose (not merely tomentose); the middle metatarsi of the males pectinated beneath with thick-set strong bristles; and the posterior tibiæ (which, as well as the posterior femora, are somewhat elongated and curved) ciliated at the apices with a small tuft of soft hairs.

H. DENTIPES, Fab.

This species, like the last, is exceedingly common; it is distinguished, together with the two following species (to both of which it is closely allied), from the others in this section by having the extremities of the third and fourth longitudinal veins of the wings strongly convergent (Fig. 2). The males of *H. dentipes* may also be known from the others by the posterior tibiæ being somewhat curved, and furnished at their apices on the inner sides with a callosity or tubercle covered with short adpressed hairs; the anterior tibiæ also are ciliated with a small tuft of hairs on their under-surfaces toward their fore part; the middle tibiæ are armed along their whole external surfaces with a number of very minute erect bristles of even lengths, arranged irregularly in several rows, giving a peculiar appearance under a powerful lens, as if the side of the limb was covered with a "chevaux de frise;" and lastly, the abdomen is tessellated with white reflections.

Fig. 2.



H. PALÆSTRICA, Meig.

This species, often confounded with the former, is rare, and has never been characteristically described. It bears a great general resemblance to *H. dentipes*, from which it differs in the following points: the posterior tibiæ are less curved, and have no callosity at the apex; the anterior tibiæ are without the tufts of hair on their under-surfaces; the middle tibiæ are ciliated along their outer sides with short curved hairs, which are not erect, but incumbent or imbricated over each other; and the abdomen is of an uniform grey colour, with a narrow dorsal stripe.

H. METEORICA, Lin.

This little species, though abundant on the continent, is not of very common occurrence in England. The males are black, usually with fuliginous wings; have black halteres, and two rather long sharp teeth at the ends of the anterior femora.

H. ARMIPES, Fab.

Two species have been mixed together under this name, but the true *armipes* may be distinguished from its congener, which I have named *H. fasciculata*, by the following characters: the anterior femora have two teeth on their under-surfaces, one much larger than the other, the smaller of which has been overlooked by of the under-surfaces of the posterior femora, and the lower half of the inner surface of each posterior tibia is ciliated with longish soft hairs extending to the apex, which commence by a tuft or loose pencil of hairs much longer than the others in the middle of the limbs. This is a common species.

H. RONDANII, *sp. n.*

Mas., niger nitidus, abdomine oblongo-ovato fusco-cinereo non tessellato ; linea longitudinali lata nigra ; oculi nudi sub-remoti; alæ sub-fuscæ, venis longitudinalibus 3tio et 4to versus apices paulo inflexis ; femora antica bidentata.

Long. 3½ *lin.*

Head : eyes bare and separated by a wide black stripe, which occupies about one-seventh of the width of the head; arista pubescent at the base, which is thickened.

Thorax with *Scutellum* black, shining, and unstriped.

Abdomen of a brownish-grey colour, without white reflections, and having a widish black longitudinal stripe down the middle of the dorsum, of an even width over each segment, though slightly evanescent on the last; genital appendages forming a small cylindrical projection underneath.

Wings short, of an uniform yellowish-brown colour; internal transverse veins exactly opposite the ends of the axillary veins; external transverse veins sinuous, and slightly oblique; third and fourth longitudinal veins slightly convergent at their extremities, but less so than in *H. dentipes.*

Calyptra rather small (less than in *H. dentipes*) and yellowish-brown. *Halteres* with the stem tawny and the knob blackish-brown.

Legs black; anterior femora with two teeth on their under-sides near their apices, the inner of which is about twice as long as the outer; anterior tibiæ narrowed at the base, slightly notched (less so than in *H. dentipes*), and without peculiar cilia; middle femora bearded on their under-sides at the base with a tuft of black hairs as in *H. dentipes* ; middle tibiæ ciliated along the whole length of their outer sides with a series of short curved hairs or bristles of even length, imbricated over each other, and having in addition three long strong bristles on their lower halves; there are also three or four shorter bristles on the posterior sides of the same limb; posterior tibiæ attenuated at the base, and without callosities at their inner extremities, slightly curved, and ciliated along their outer surfaces with soft hairs, which become gradually longer towards the apex; there are also several long bristles on the posterior surfaces at the lower ends.

The female is unknown to me.

This species bears a very close resemblance to *H. palæstrica*, but differs in being smaller and darker in colour, in having shorter and browner wings; a rather wider frontal space between the eyes; and a much wider longitudinal dorsal stripe on the abdomen. It appears to be rare, as I have only seen one specimen, which I captured near Bicester, Oxon, in June, 1880.

H. FASCICULATA, *sp. n.*

Mas., niger nitidus pilosus; abdomine ovato albo cinereo, linea longitudinali nigra, segmento secundo dilatata signato; oculi coherentes nudi; femora antica unidentata; femora postica subtus setis duabus contiguis medio instructa; tibiæ posticæ setulis tribus longis forma penicilli rigidi ornatæ. Long. 2 lin.

Head: eyes contiguous, naked; arista almost bare; face silvery-white, very slightly prominent.

Thorax shining black, unstriped, having four bristles behind the suture in each medio-lateral row; sides setose. *Scutellum* black.

Abdomen ash-grey, ciliated with long soft hairs on both edges and middle of segments; first segment black at the base, from which extends a longitudinal black stripe down the dorsum, which is dilated into a triangular black spot on the second segment, the apex of the triangle being backwards, and ending in a narrow line passing over the third and fourth segments; anal appendages small and shining black.

Wings hyaline; transverse veins rather near together; external one slightly oblique, and a little sinuous; third and fourth longitudinal veins running almost parallel to each other towards the apex.

Calyptra yellowish-white. *Halteres* dingy yellow.

Legs black; anterior femora with a single sharpish tooth on the under-surface near the end; anterior tibiæ narrowed at the base, and with the lower two-thirds thickened and shortly ciliated on posterior surfaces; middle femora armed on under-surfaces near the base with two or three strong blunt bristles; middle tibiæ furnished along the whole of their external surfaces with numerous minute erect spines, somewhat similar to those found in *H. dentipes*; posterior femora with two straight blunt hairs, placed near to each other, on the under-surface, exactly in the middle; posterior tibiæ with a small rigid pencil of about three long hairs, converging to a point on their anterior surfaces a little before the middle; a few short soft hairs are placed on both inner and outer surfaces near the apex.

I do not know the female.

This species bears a very close general resemblance to *H. armipes*, with which it has evidently been confounded. Zetterstedt says in his description of the latter, "variat ♂ femoribus posticis subtus in medio setulæ geminæ." Besides the points of distinction which I have mentioned between these two species, I may add that the poisers are fuscous in *H. armipes*, and yellow in *H. fasciculata*; the wings are slightly brown in *H. armipes*, and almost white in *H. fasciculata*; and lastly, the anterior tibiæ are slightly bearded with some long hairs on their under-surfaces in *H. armipes*, while they are only ciliated with short hairs in *H. fasciculata*.

This little fly is generally distributed.

(To be continued).

NOTES ON *TENTHREDINIDÆ*.

BY J. E. FLETCHER.

The ♂ of *Hemichroa alni* has hitherto been reputed very rare. My experience of the species is very limited, as I have bred only nineteen specimens, four in August, 1880, and fifteen in May last:

Until this year *Hemichroa rufa* was supposed to have no ♂, but out of some ninety specimens of the species that I bred in May, two proved to be ♂. As, doubtless, Mr. Cameron will describe this sex in his forthcoming work on these insects, I refrain from doing so.

On July 19th, 1880, I found a *Fenusa* larva mining a blotch in a leaf of *Populus nigra.* In a day or two it went to earth, and the imago was bred on June 1st of this year, the insect having been more than ten months under the soil. It proved to be *Fenusa hortulana*, Kl. As it differed slightly from the published descriptions, I submitted it to Mr. Cameron, who kindly examined it, and confirmed my identification thereof. In July last I found another larva on the same tree, at Crown East, and three others at Broadheath and Hallow.

In the first third of this month (September) I succeeded in collecting twenty larvæ of *Phyllotoma ochropoda*, a number only once before equalled in one year. It seems not to occur in every place where its food-plant (*Populus tremula)* is common; but I have found it at Monk Wood, Trench Wood, and Crown East Wood.

My local list of *Tenthredinidæ* now numbers 130 species, in the investigation of which I have experienced many delightful hours.

To Mr. Cameron my thanks are due for all, as until he determined my captures and assisted me with types, I knew by name not more than six species.

Worcester: *September*, 1881.

ON PARTHENOGENESIS IN *TENTHREDINIDÆ.*

BY J. E. FLETCHER.

Having continued my experiments in this subject during the current year with virgin ♀ saw-flies, I offer the following notes:—

Hemichroa rufa.—The dozen larvæ of this species mentioned (Ent. Mo. Mag., xvii, 180) as having spun up, attained the perfect state in May last, all ♀. Notwithstanding this, the species is not entirely without ♂, as will be seen in another place.

Crœsus varus.—Two ♀ were bred in May, and deposited eggs from which larvæ hatched, but only two reached the imago state —both ♀.

Nematus salicis.—From a specimen bred in May I obtained five larvæ, three of which spun up, and yielded ♂ imagines.

The following were tried, but none of them produced ova:— *Trichiosoma vitellinæ, Dineura Degeeri, Nematus croceus* (2), *Hemichroa rufa* (2), and two of the parthenogenetic brood of the latter above mentioned.

Worcester: *September*, 1881.

FURTHER NOTES ON PARTHENOGENESIS IN *COLEOPTERA*.

BY J. A. OSBORNE, M.D.

I send you by this day's post a parthenogenetically-bred *Gastrophysa raphani*. It is the second I have succeeded in rearing. Of the first there is some account in this Magazine, vol. xvii, pp. 127—130; it died after a life of 35 days, and developed "gastrophysm," and on examination it proved to be a female. The present example has the peculiarity of one of the elytra being "cut away" so that they gape, and it has a further defect in the anterior tarsi, which caused embarrassment and awkwardness when it was alive. This is likewise a female, and although it lived but 17 days, it developed a large amount of "gastrophysm," and paired with two different males; no eggs, however, were laid by it. The egg that produced it was one of a batch of 42; of which 18 showed signs of vitality, but only two produced larvæ. It was laid by a virgin female on the 14th June, and hatched on the 24th. The first and second moults occurred on July 1st and 5th—6th respectively. The metamorphosis to pupa took place on July 14th—15th, and the imago appeared on July 23rd. The batch of eggs was the fourth laid by the same mother; all the batches, of which twelve were laid before impregnation, showed an extraordinary amount of parthenogenetic fertility. Of 146 parthenogenetic eggs, six hatched, and the larvæ lived a shorter or longer time. After this the insect was allowed to pair with a male, and the subsequent eggs became perfectly viable.

Nothing has struck me more in these experiments than the perfectly graduated scale of degree of fertility and developmental capacity in both impregnated and unimpregnated females, and the eggs laid by them. The two series overlap to a considerable extent, and are so continuous as to represent virtually one series, in which the male influence may be regarded as only a collateral (though, of course, extremely important) circumstance. The indications of being "addled," which occur in two or three days, are just as characteristic of eggs laid by impregnated beetles that have escaped fertilization, as in parthenogenetic eggs. But the great majority of even virgin eggs pass beyond this condition, and at the usual time for hatching are uniformly yellow and of gelatinous consistence, and in these, more minute examination often reveals all degrees of imperfect development. Few, however, hatch, and the larvæ usually die very soon. Development in these is not only imperfect, but is also retarded.

almost as much certainty of finding it as in *Nematus ventricosus*; at any rate, in the spring and early summer months. I have not yet met with *G. polygoni*, but would be glad to obtain eggs of it at the proper season.

Finally, I must call attention to the seeming *purposelessness* of so much parthenogenetic fertility in *G. raphani*. The sexes always appear to be present in about equal numbers, and one male is able to fertilize many females. It would appear to be without any place in the economy of the insect analogous to that of bees and wasps, according to the theory of Dzierzon and Von Siebold. It appears to me rather the concomitant of a prevalent species supplied with abundant food of a stimulating quality.

Milford, Letterkenny, Ireland:
October, 1881.

NATURAL HISTORY OF *CRAMBUS WARRINGTONELLUS.*

BY WILLIAM BUCKLER.

Of this species I last year received two batches of eggs, the first on the 14th of August from Mr. W. H. B. Fletcher, and obtained by him in the New Forest, and supplemented afterwards with a few more, and the second batch six days later from Mr. J. Gardner, of Hartlepool, and to both friends I return many thanks.

All the eggs were laid loose; those from the South hatched on 16th of the month, and up to the 1st of September; those from the North began to hatch on August 27th, and had finished on the 29th. The young larvæ from these wide apart localities were kept separate, and placed in pots with growing plants of *Festuca duriuscula*, *Aira flexuosa*, and some other grasses of a hard nature; their progress was noted up to the middle of November, when they began to close their numerous galleries for hibernation, after having very considerably ravaged the grass.

In early spring of 1881, I noticed a great number of them busily engaged in afternoons, whenever the sun shone on the pots, spinning threads in all directions round the outside of the grasses which had in the interval recovered in a great degree; but for some time after this I was unable to attend to them, until at length I observed the grass to be nearly all dead; then, when almost too late I had the mortification to find the greater part of them had deserted their quarters, though enough still remained to serve my purpose of figuring the larvæ and breeding the perfect insects.

The moths from the New Forest were bred on July 7th to 17th, and those from Hartlepool on July 13th to 17th; and here it may be stated there was no very appreciable difference in the moths from either locality, beyond this, that the darkest southern example was of a satiny creamy-yellowish ground-colour, with the veins and inner margin dark bronzy-green; the darkest from the north was of a whitish cream-colour and bronzy-brown; while on the other hand the lighter examples of the south had the veins and inner margin browner, while the northern were more green.

The shape of the egg is broadly elliptical, appearing almost truncated at the ends, the shell numerously ribbed and finely reticulated; the colour when first laid is pale straw, changing gradually in a day or two to pinkish-red, which deepens until about the tenth or eleventh day when it is brownish-red with a greyish-brown spot at one end, and then hatches in a few hours.

The young larva is of a light salmon-red colour showing an internal deeper reddish vessel through the skin, the head and neck plate darkish brown, and a paler brown anal plate: by the middle of November the case or gallery it has constructed is a quarter of an inch long, composed outwardly of finely comminuted grassy particles firmly attached to the grass about three-quarters of an inch above ground; the larva itself at that time, while yet feeding during mild days, is nearly three-sixteenths of an inch long, and comes out readily from its abode when disturbed, it is of stoutish character, tapering a little posteriorly, the skin slightly glistening and of a lightish mahogany-brown colour, the usual spots glossy dark transparent brown with a black dot in each—the plates and head also dark transparent brown—the lobes of the head very dark, also the mouth, ocelli black.

After hibernation some are full-fed and spun-up by the end of May, while others are not yet full-grown, ranging in length from half an inch to five-eighths, and go on feeding till the second week in June; when near full growth they inhabit tubular galleries two inches long of irregular figure, and firmly attached to the grass in an upright position with the lower end touching the ground, and fabricated of grey silk covered with particles of moss, frass, and grains of earth.

When full-grown the larva is three-quarters of an inch long, of moderate stoutness, cylindrical, though tapering a little at the three hinder segments, and the head is rather smaller than the second, the segments are well defined and have a sub-dividing wrinkle about in the skin though dull is yet clear enough to show a darker dorsal pulsating line, the shining head, and plate with a wide behind dorsal division are of lightish warm brown, both dotted and marked with darker brown, mouth blackish, the shining spots on the back and sides, each bearing a hair, are of a darkish warm brown on the back, lighter brown on the sides, the small round spiracles are black, the anterior legs ringed and tipped with darkish brown, the ventral legs fringed with dark brown hooks: when full-fed and about to spin up, the colour of the skin changes to a pale pinkish-brown.

The pupa is enclosed in an oval cocoon half an inch long and quarter of an inch wide, made with similar materials to those of the gallery, but is more tough and stronger and sunk partly in the earth; the pupa itself is three-eighths of an inch long with no peculiarity of shape, with longish wing covers, leg-and antenna-cases, the tapering abdomen ending in a short truncated projection, the spiracles rather prominent; the colour at first is pale yellowish-brown and shining, changing to dark brown a little before the insect is disclosed.

Emsworth: *September 30th*, 1881.

LIFE HISTORY OF *DEILEPHILA SPINIFASCIA*, BUTLER.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

The larvæ of this fine species were abundant in the neighbourhood of Valparaiso at the end of 1872 and beginning of 1873, and as they were of all sizes, and ova were to be found throughout October, November, December, and January, the probability is that there is a succession of broods throughout the year. Their food-plant, *Muhlenbeckia injucunda*, called by the Chilians the "Quilo," grows in profusion all over the country, and in some places inland becomes a large straggling plant of vigorous growth, often entwining itself among other shrubs and attaining a considerable height, but immediately on the coast-line it never grows to any great size. The parent moths usually select small stunted scrubby bushes, growing in exposed places, whereon to deposit their eggs. The eggs hatched in the course of a week or ten days. The young larvæ were exceedingly beautiful creatures, but after their last change they were by no means so handsome, and, moreover, at that age varied very considerably. Before undergoing their last moult they were as difficult to sketch or describe as the larvæ of *Deilephila euphorbiæ*, but the following description will give a pretty fair idea of what they were then like. Ground-colour deep velvety-black; on fifth to eleventh segments inclusive there is a pale yellow ocellated spot, having a pink centre, and this spot is enclosed by an intensely black perpendicular stripe which runs from the dorsal to the spiracular line; behind this, on each segment, there are five alternate golden-green and black perpendicular stripes, the first being three times the width of the other four; dorsal stripe rather broad and pale pinkish-yellow; spiracular stripe as wide as the dorsal and bright red; spiracles small and yellow; under-surface dark olive-green thickly dotted with yellow spots; head, prolegs, and claspers dull red; horn dull red with a black tip; the dorsal stripe runs through the horn to the extremity of the anal claspers where it is bordered on each side with deep black.

The full grown larvæ (which are as large as those of *Sphinx ligustri*) as I have mentioned before, vary exceedingly, hardly two being alike, but the following was perhaps the most usually met with and typical form. Ground-colour olive-green; dorsal stripe broad and pink; sub-dorsal line pink enclosing from fifth to eleventh segments a bright red ocellated spot with shining black pupil; just below the spiracles, which are pink, is another interrupted stripe of the same colour; under-surface, which is somewhat wrinkled, dark olive-green thickly spotted with yellow; head, prolegs, and claspers pink; horn rough, pink with a black tip.

The following is a description of four of the varieties:—

Var. A.—Whole of the upper-surface dull black; ocellated spots pale pink with intensely shining black pupils; dorsal stripe narrow and red; an interrupted sub-dorsal stripe from the second to fifth segment, where it merges into the ocellated spot; behind each ocellated spot are two small faint pink spots indicating a continuation of the sub-dorsal stripe; skin-folds on each side of the face much wrinkled and pale yellow; spiracles pale straw-colour, and beneath them runs a broad interrupted pink stripe; under-surface blackish-green spotted with yellow; head, prolegs, and claspers dull red; on the twelfth segment there is an oblique pinkish stripe; above the anal claspers there are two oval pink spots; horn dull red with black tip. This was a common variety.

Var. B.—Whole surface pale olive-pink; ocellated spots straw-colour, with black pupils, and bordered outside with black; head pale olive-green; dorsal stripe broad and pale pink; sub-dorsal line of the same colour, but so faint as to be scarcely perceptible; spiracles orange in a black ring; spiracular line very faint and pink; prolegs and claspers bright pink; horn pale blue.

of pink and that again by a broad ring of black; below the spiracles, which are deep orange, a broad pale pinkish-yellow stripe, bordered above by numerous yellow square-shaped spots; under-surface lead-colour thickly spotted with yellow; head pinkish-brown with pink cheeks; prolegs and claspers pink; horn lead-colour with black tip.

Var. D.—Entire surface bright pea-green; ocellated spots with black pupils, bordered by pink and black; dorsal and spiracular stripes bright pink; spiracles orange; under-surface a slightly darker shade of green and thickly dotted with small black spots; head, prolegs, and claspers bright pink; horn pink with black tip. This was a very beautiful variety but it was very rare.

This species seemed to be confined entirely to the coast line, but even here it was local, though, where it occurred, it was usually very plentiful. I have counted as many as twenty-one larvæ of different sizes on a single small bush. The young larvæ feed quite exposed, and on account of their brilliant colour were very easily seen, but the full-grown ones, although sometimes to be found on their food-plant, were oftener to be seen on the bare ground by the side of it, and they did not exhibit any desire to hide themselves beneath the branches. They appeared to be exempt from the attacks of birds, for notwithstanding there were numerous insect-loving species constantly feeding around them, I never saw one touch them. However, they had one dire enemy which preyed on them and kept down their numbers, and this was a horrible long-legged black spider with an immense bloated abdomen, decorated on each side with a bright scarlet spot. These creatures, which were said to be poisonous, dwelt in holes at the root of the "Quilo," and when hungry issued forth and seized a larva, although they did not seem to be able to manage a full-grown one. Besides the remains of larvæ I noticed dozens of dead and dried up beetles in their retreats, showing that they occasionally varied their diet.

When full-fed the larvæ collect dead leaves, &c., around them, and spin a loose sort of cocoon on the surface of the ground, in which they change to a reddish-brown pupa resembling that of *C. Elpenor.* Sometimes I found the pupæ lying quite exposed, in no cocoon whatever, beneath the bushes, and at other times I came across them in little holes under stones when I was looking for *Coleoptera.* One day I found a pupa which was rather larger and more slender than those of *spinifascia*, and in a short time it produced a fine *Deilephila Annei*, Guér., being the only example of this species that I obtained.

Instow, North Devon:
May, 1881.

DESCRIPTION OF AN *EUDOREA* NEW TO SCIENCE (*EUDOREA CONSPICUALIS*).

BY J. B. HODGKINSON.

Expanse of wings (♂) 8 to (♀) 9 lines. Palpi light above, dark beneath. Tongue yellow (a conspicuous object). Eyes large, dark. Head silvery-grey. Antennæ steel-grey, short. Thorax and abdomen silvery-grey.

Fore-wings with the basal area silvery-grey (under a low power very quaintly irrorated), with two dark lines proceeding from the base, of which the lower line is the longer; first line slightly curved; the orbicular stigma oval, filled in with very pale ochreous, the claviform stigma often linear or arched and attached to the first line, often running well into it on the fold; central area dark grey, irrorated, having a well pronounced dark blotch on the costa above the reniform stigma; this stigma varies in form, often it is K- or B-shaped (rarely forming the figure 8), the B wanting part of the top and bottom looks like the figures 13; the second line commences with a rich dark grey patch below the costa pointing outwards, then inclines inwards a little below the sub-costal nervure; the posterior area is bright light silvery-grey, having very light faint irrorate patches, dark near the margin, which has two rows of well-defined streaks (not dots) at the inner edge of the cilia; cilia light, long. Hind-wings light silvery-grey.

The general appearance is light silvery-grey, the form rather broad; intermediate between *E. pyralella*, H., *ingratella*, Zeller, and *atomalis*, Doubleday, it sits triangularly and may be known, when at rest, from any other *Eudorea* by the distinct pale basal area standing out as a whitish dot on the tree-trunk, on which the insect rests. It appears in July and August near Windermere. I first met with it 10 years ago, when in company with Mr. C. S. Gregson; I have since revisited the district and taken a nice series. When on the wing it appears as pale as *E. pallida*.

Spring Bank, Preston:
September 18*th*, 1881.

DESCRIPTION OF A NEW BUTTERFLY FROM THE MALAY PENINSULA.

BY W. L. DISTANT, V.P.E.S.

CETHOSIA LOGANI, *n. sp.*

♂. Above: anterior wings with the basal third bright red, remainder black with white markings. Three pairs of narrow black longitudinal fasciæ crossing cell, the last pair somewhat indistinct owing to proximity of the black area, an indistinct arcuated spot beneath cell, and two somewhat waved linear spots, situated one beneath second median nervule near its base, and the other beneath the third spots situated wide apart, a very large sub-quadrate spot commencing at first and terminating near third median nervule, followed by a small sub-lunate spot, and a sub-marginal row of large but somewhat obscure lunate spots. Posterior wings bright red with the outer margin broadly black, inwardly bordered with a series of irregular spots of the same colour, and nine or ten black spots near base; the broad black marginal border contains two small red spots divided by the discoidal nervule, and a marginal series of large pale and obscure lunate spots.

Under-side of wings in general pattern as in *C. nicobarica*, Feld., but white markings much more predominating, and differing principally by the third transverse fascia on the posterior wings, which is broader, more irregularly spotted above, and much more regularly and closely margined with small rounded spots beneath. All the fasciæ are also placed closer together than in Felder's species, and the large sub-quadrate spot on the fore-wings is also visible beneath.

Expanse of wings, 73 millim.

Hab., Province Wellesley.

This is a very distinct race or species of the Malayan representatives of the genus. It is most closely allied to *C. nicobarica*, from which it differs by its much smaller size, the extent of the white markings on the anterior wings, and the different pattern beneath, as already described, and its natural position appears to be between Felder's species and *C. Methypsea*, Butl.

C. Logani will be figured in a forthcomming work, "Rhopalocera Malayana."

Derwent Grove, East Dulwich:
October, 1881.

DESCRIPTIONS OF SOME APPARENTLY NEW SPECIES OF *ARCTIIDÆ* FROM NORTH AMERICA.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

Having recently had occasion to go through the descriptions and examine the figures of all the known N. American species of *Arctia*, I have found that two or three species in the National Collection are still unnamed.

Although it is always possible, in so variable a genus as *Arctia*, that any named form may turn out to be an aberration or sport of something previously described; I still think it useful to have names for such forms (even in the event of their proving to be sports), as it obviates the necessity of describing them on every occasion when they are referred to.

The first species to which I shall have to call attention is nearly allied to *A. phyllira*, of Drury; unfortunately, it bears no locality, so that it is possible that it may be a Mexican representative of Drury's species.

ARCTIA DODGEI, *sp. n.*

The primaries differ from *A. phyllira* in being of the peculiar greenish-grey tint of *Hypercompahera*, and with the pattern of *A. Williamsii*, of Dodge; the thorax is also slightly greenish; but the secondaries and abdomen are like those of typical *A. phyllira*. Expanse of wings, 45 mm.

The next species is allied to *A. phalerata*, but it seems to me to be quite distinct; it certainly differs more than most of the species of *Arctia* described nowadays.

ARCTIA OCHREATA, *sp. n.*

Allied to *A. phalerata*, but the cream-coloured stripes on the primaries are deeper in colour and more slender, the sub-apical oblique stripe completing the ≤-shaped character always more or less abbreviated, and sometimes absent (one example shows only the commencement of the furcation, which, when completed, produces this character); secondaries bright ochreous, instead of pinky-white, with rose-coloured abdominal border; the sub-marginal series of black spots much enlarged, the sub-apical one frequently confluent with the costal border, producing a large black apical patch, also a well-marked marginal spot between the second and third median branches; body ochreous; a broad longitudinal streak on the middle of the thorax, a stripe on the tegulæ, and a broad belt through the abdomen, black; similar differences on the under surface. Expanse of wings, 34 to 43 mm.

United States (*E. Doubleday*).

We have four examples of this form in the Museum, two of them presented by Doubleday, the others from two distinct sources, but in no case have we received the exact habitat: "United States" having, I suppose, been considered sufficient by the old collectors.

The third and last *Arctia* to which I shall have to advert differs from *A. ochreata* much as *A. decorata*, Saund., is supposed to do from *A. Nais*, Drury.

ARCTIA RHODA, *sp. n.*

♀. Also allied to *A. phalerata*, the stripes on primaries narrower and ochreous; the sub-apical stripe sometimes abbreviated; secondaries deep rose-red, the black spots rather larger than in *A. phalerata*; abdomen also deep rose-red at the sides. Expanse of wings, 41 mm.

United States (two examples).

I think it quite possible that this may be the female either of *A. phalerata* or *ochreata*; but, if so, what becomes of *A. decorata*, Saund., which agrees absolutely in everything but the colour of the secondaries with Drury's figure of *A. Nais*? one of the examples has an old label attached to it, with the name "*vittata*" inscribed thereon.

ON CERTAIN BRITISH *HEMIPTERA-HOMOPTERA*.

BY JOHN SCOTT.

(*Continued from p.* 105).

DELTOCEPHALUS I-ALBUM, *sp. nov.*

♀. Clear pale brownish-yellow. *Crown* yellowish-white with a brownish spot on each side of the centre at the apex, a short brownish streak within the anterior margin extending to within a short distance of the anterior margin of the eyes, and a short transverse streak of the same colour in a line with the latter. *Face* bone-white. Frons black, with three transverse, slightly curved, white streaks, the upper two clubbed at their inner extremity, side margins narrowly black to within a short distance of the apex, divided by one or two white spots, within the lower margin two short, transverse, black spots. *Clypeus* yellowish. *Rostrum* brown, apex narrowly black. *Loræ* pale yellowish-white, inner margin narrowly black. *Cheeks* pale yellowish-white, with a small black spot on the inner margin near the apex.

Pronotum yellowish-white with a somewhat indistinct, pale, longitudinal, central line, and a reddish spot on each side of the same at the base. *Scutellum* clear pale brownish-yellow, with a short transverse channel in the centre, the space between this and the apex white. *Elytra* clear pale brownish-yellow, shining, nerves fine: *clavus*, apex of the axillary nerve white, anal nerve pale brownish-yellow, apex white, area enclosed between the latter and the suture white at the base, in which is a dark spot: *corium* clear pale brownish-yellow, transverse nerve of the basal area broadly white, the colour extending for some distance along the brachium and cubitus, and forming an I-shaped character, posteriorly narrowly bordered with brown; nerves of the ante-apical and apical areas fine, white, apex of the latter margined with black. *Legs* pale yellowish-white; *thighs*: 1st pair with a black or pitchy-black band next the base; 2nd with a pitchy-black spot on the upper margin near the apex, and another on the lower margin towards the base; 3rd yellow, with three or four minute black spots on the upper margin at the apex; *tibiæ*: 3rd pair yellow, apex narrowly black, spines brown, set in black punctures, some of which are in pairs; *tarsi*: 1st and 2nd pairs yellow, 3rd black, 1st joint at the base yellow: *claws* of all the pairs black.

Abdomen above, black; basal four segments on the sides yellow: 5th and 6th yellow, the former with a fine black longitudinal streak on the side, the latter with two black spots on each side of the posterior margin, one placed at the lower extremity, the other in a line with the streak on the former: underneath black, posterior margin of the 2nd, 3rd, and 4th segments very narrowly red, terminal two yellow, posterior margin of the last }-shaped, with a black margin and a depression on each side. Length, 1¾ line.

This species forms one of a large group of which *D. ocellatus*, Fall., D. *oculatus*, J. Sahlb., &c., may be taken as types. It certainly does not agree with any of the descriptions of the late Dr. Fieber, nor with any of his types, either on the continent or in my collection. At the same time as the genus is so remarkable for its variability, I am not positively prepared to see the name retained which I have given to this form. The bone-white face, the black frons, with the three transverse pale lines, the white I-shaped character across the transverse nerve of the basal area of the corium, alone afford characters for its easy recognition.

Taken by Mr. J. Edwards, near Norwich.

Lee, S.E.: *6th October*, 1881.

The influence of Volcanos on flying Coleoptera.—On the 15th July, 1880, I ascended a volcano in South Yezo, and I may roughly describe the mountain as being about 2600 feet high, with vegetation of small oak and alder to 1200 feet, and then shrubs and grass, leaving a cone of 600 to 700 feet, a bare surface of powdered lava or sand to absorb and radiate the heat of a July sun.

On the oaks and alders were many *Lucanidæ* and *Elateridæ*, a *Calosoma*, and now and then a tree *Silpha* allied to *4-punctata*. In the high sandy area I saw nothing but sand-piercing *Hymenoptera*, until I reached the ridge of the crater. The ridge was about 15 to 20 feet broad, and the crater say 150 deep, and at the bottom jets of steam, bubbling sand and sulphur, made walking in some parts impossible, or even dangerous. Sitting on the ridge, tired and hot, I felt the mountain draught most refreshing, and, in a few moments more, discovered around me a number of *Elateridæ*, some dead and dry on the sand; others struggling on their backs, and now and then some new arrival on the wing, fresh and vigorous from the forest below, came to join the dead or dying on the crater's edge. Looking about, I subsequently obtained a few dead *Silpha 6-carinata*, Mots. It seemed to me that about three hours were sufficient to kill an *Elater* after it dropped on the sand, the great heat gradually destroying its life by abstracting its moisture, and I observed specimens fall on the ridge that were not carried over into the crater. The *Elateridæ* consisted of two or three tree-species with red elytra, and doubtless began life in the forest below, and were not seeking food on the burning sandy height. The conclusion is, therefore, that they were carried up involuntarily, borne on the current of wind, which was flowing upwards to the crater, and caused by the different temperature on the sand to that in the area of vegetation below it.

When I passed through the forest, insects in this northern latitude were in the profusion of summer; and the question arises—why, of all this abundance, did the *Elateridæ* and *Silphidæ* alone arrive to perish on the dry heated lava. The elytra of these species, when raised to the angle necessary to allow the membranous wings action for flight, are just in that position to catch the full force of the upward current, and thus these species with ample elytra met their death by being mechanically lifted up into the arid region of sand. No Elaters were found in the crater, as at the ridge the direction of the air-current changed, and they fell on the earth; and the sand-piercing *Hymenoptera* of the intermediate area were absent on the ridge, as their wings, all used for motive power, enabled them to fly hither and thither in the breeze, and they remained in their natural location.

These notes throw some light on the shortened wing-cases of certain *Coleoptera*, notably of course the *Brachelytra*. Then a few *Longicornia* (*Necydalis*), a few their movements in mid-currents. *Bledii* and *Trogophlæi* would be carried away from their burrows in the mud-flats to situations unfit for their existence, and all the minute members of this family are largely dependent for their well-being on the humidity of the situations where they dwell. Large heavy-bodied insects have a weight to counteract the undue influence of the wind, hence the *Lucanidæ* were absent on the ridge; and the *Longicornia* have a counterpoise in the long antennæ. But in the *Staphylinidæ* the advantage of shortened elytra is very marked, and is one of those forms of organization which extend the lives of individuals and races by fitting them for the mechanical contingencies of their existence.

The traveller in Japan, go in what direction he will, meets with mountains, and in going over the "toge" or passes between them, will generally ascend with the breeze, or face it as he descends, after passing the ridge, and many times in such places, by sweeping where there is vegetation, have I obtained great numbers of *Melanotus* and other *Coleoptera*, evidently collected there by the breeze.

The shortened wing-case in all the families mentioned is accompanied with a prolonged abdomen, which is an additional balancing power, and it is significant that a very large proportion of the flying *Coleoptera* belong to the *Brachelytra*, and that mountain species, such as *Lesteva*, have the longest elytra, and cling to the under-surfaces of stones near water. In Japan there is one genus, *Trygæus*, which is sluggish, living under damp leaves in forests, and its elytra are scarcely shortened at all. It would, however, be difficult to base any general theory upon these facts, as so many mountain species have very abbreviated elytra and no wings at all, and such wet-loving sluggish creatures as *Acrognatha* have short elytra utterly disproportionate to the length of their body.

In former days I frequently found *Hydaticus* (Trans. Ent. Soc., 1873, p. 45) under stones at an elevation of 1600 feet, that is, 1200 feet above any water, and this spring I secured two examples on the back-bone of the same mountain, and I now account for their presence at this altitude by their being caught by an ascending current, the membranous wings being insufficient to counteract the lifting power of the elytra.—George Lewis, Hiogo Hotel, Kobè: *July 8th*, 1881.

Coleoptera near Hastings.—The following are some of our best captures this season:—*Melandrya caraboides*, a few in an ash-log at Hollington; two or three *Mordellistena abdominalis*, by beating May-blossom; *Atemeles emarginatus*, caught flying over a road at Hollington. We have again met with a few specimens of *Athous difformis*. The Camber sand-hills have produced *Crypticus quisquilius*, *Helops pallidus*, *Xantholinus tricolor*, a quantity of *Cteniopus sulphureus*, off *Galium*, and *Ceuth. echii*, which was abundant on *Echium*. From a dead cat, at the same place, we got a small series of *Saprinus immundus*. *Phaleria cadaverina* was very plentiful under putrid fish in the larval as well as the perfect state. Some moss yielded a few *Hyperaspis reppensis*; *Silpha littoralis* was not uncommon in rooks which we hung up in a wood at Guestling, in May, accompanied by a few *S. thoracica*, *Necrophorus vespillo*, *ruspator* and *interruptus*, and quantities of *mortuorum* and *humator*. A single specimen of the somewhat rare *Rhynchites cupreus* was obtained at Heathfield. *Strangalia 4-fasciata* has occurred at Guestling, Heathfield, Battle, and Dallington; and *Chrysomela fastuosa*, near Guestling. *Lampyris noctiluca* has been unusually plentiful this season.—E. P. and H. F. Collett, 12, Springfield Road, St. Leonards-on-Sea: *October 12th*, 1881.

Note on Micralymma brevipenne.—During a recent visit to Barmouth I found *Micralymma brevipenne* crawling about (very sparingly) on old posts and stones near the mouth of a brooklet three or four miles up the Mawddach. The conditions under which it occurred being rather different from those previously known to me (its habitat, according to the "authorities," being "far below high water mark on the coast"), I thought a record of the capture might be interesting. I have looked through all the volumes of the Ent. Mo. Mag. for notes on *Micralymma*, but, strange to say, in all the seventeen volumes there does not seem to be a single record or note relating to this curious little beetle.—W. G. Blatch, Green Lane, Smallheath, Birmingham: *October 17th*, 1881.

Deltocephalus Flori, Fieb., in England.—An insect taken by me among the heather at Esher, Surrey, August 27th, 1874, and hitherto undetermined, has been recognised by Mr. Scott as this species, known previously as British from Scotland only (*vide ante* p. 66).—J. W. Douglas, 8, Beaufort Gardens, Lewisham: *18th October*, 1881.

Hemiptera at Hastings.—Perhaps the following may be worth recording: *Acalypta cervina*, a few in the Guestling sand-pit. *Microphysa elegantula*, a single ♀ found walking on a post at Hollington. *Calocoris fulvomaculatus*, one, by sweeping, at Guestling. I was very pleased to get *Stenocephalus agilis* at Hollington, but failed to get more than one specimen. *Sigara minutissima*, I secured one of this, and saw several others at the Pett Ditches. *Salda littoralis* and *lateralis* have been taken at Rye Harbour. *Sehirus 2-guttatus* seems to be distributed all over our district. I obtained *Corizus maculatus* at Dallington, but had not determined it in time to include it in last month's list.—E. P. Collett, 12, Springfield Road, St. Leonards-on-Sea: *October*, 1881.

Sartena amœna.—The discovery of the identity of this species with *Neurorthus iridipennis*, Costa, by Mr. McLachlan (*cf. ante*, p. 89), is very interesting. After a careful examination of a type in my collection with Costa's description and figure (both are not very sufficient), I have no doubt of the identity. I believe also that there is no doubt of the identity with *M. fallax*, Ramb. The types communicated to Rambur by M. Géné were returned probably, and may be still preserved in his collection.* According to a list of his collection, written and communicated to me in 1857 by De Selys-Longchamps, *M. fallax* and *M. parvulus* were not present among Rambur's types.

Not intending any reclamation, as there is none, I beg to state that I received the *Neuroptera* from Corsica, January 28th, 1862, that I sent my paper June 5th, 1862, and that it was presented to the Society in Paris, July 9th, 1862 (Bull. T., 2, xxxi), but printed only in 1864, with the remark, "Séance, July 9th, 1862." Of course, I was thus unable to have any knowledge of Costa's publication. Perhaps it is not known to entomologists of to-day how difficult the work was twenty, and even ten, years ago. The only copy of Costa's works then in Germany was in the hands of Senator v. Heyden, in Frankfort, and to his untiring kindness I was indebted for all

Drepana sicula.—I have great pleasure in recording my success in breeding *D. sicula* in the autumn of last year, after most diligent search, necessitating a fearful amount of hard work. I took a few larvæ during October, these turned to pupæ; the first specimen (a male) emerged on May 18th; I much regret I could not obtain fertile eggs, for although two pairs were in cop. for over twenty hours, yet the eggs deposited proved unfertile. This season I have spent a great deal of time searching for the moth, but have only been rewarded with one specimen; I have done rather better in collecting the larvæ this autumn. I trust I may be successful in procuring fertile eggs.—W. K. MANN, Wellington Terrace, Clifton, Bristol: *October*, 1881.

Heliothis armiger, Gymnancyla canella, &c., in East Sussex.—On the last Bank Holiday (August 1st) I was on the Camber Sand-hills near Rye, when I found several pupæ of *Depressaria cnicella*, loosely spun up in the leaves of sea-holly, *Eryngium maritimum*, and also took one specimen of the perfect insect. Near the town of Rye I beat *Catoptria candidulana* (*Wimmerana*, D. L.) from sea wormwood, *Artemisia maritima*. On a subsequent visit (September 13th) to the Camber Sands I saw plenty of traces of the larvæ of *Gymnancyla canella* on *Salsola kali*. I brought away but few of the larvæ, as I had little time to search for them, they were evidently abundant, but some of the larvæ were quite small. On September 24th, I took *Heliothis armiger* resting on a flower in the Rectory garden (at Guestling), and the same afternoon my friend Mr. H. F. Collett brought me a beautiful specimen of *Hoporina croceago*, taken within a short distance of my house. —E. N. BLOOMFIELD, Guestling Rectory: *October 11th*, 1881.

A fruitless search for the larvæ of Coleophora apicella.—Some correspondents having expressed a wish to have some larvæ of this insect, which I had collected two years ago rather freely on some plants of *Stellaria graminea*, growing in the shelter of furze-bushes on the common at Tunbridge Wells, I took an opportunity whilst staying at Hadlow near Tunbridge, to go over to Tunbridge Wells, hoping to lay in a stock of these larvæ. I returned, however, empty-handed, not having found a single one. This unfortunate result was the effect of the singular meteorological conditions which have prevailed this season. The severity of the winter killed half the furze-bushes on the Common, the long dry time which prevailed from the middle of March to near the middle of August had burnt up all the vegetation on the Common, and it was not till the rainy period which set in (so disastrously for the farmers then busy with harvest) on the 12th August that a revival of vegetation restored some greenness to the aspect of the place, and when I visited it on the 17th September the Common was more luxuriantly green than I had ever seen it.

The *Stellaria graminea* was making up for lost time and was pushing up dense masses of green leaves (on which I found here and there the pretty larvæ of *Hadena pisi*), but it was only occasionally I found its star-like white flowers already expanded and none had yet reached the seed-bearing stage—there was, therefore, positively not an atom of food for any larvæ of *Coleophora apicella*, though in 1879 the first fortnight in September was the very period when I had met with them. This irregularity in the period of flowering and fruiting of its food-plant must surely be very awkward for the larvæ of *Coleophora apicella*, especially if the parent moths deposited their eggs at the usual time.—H. T. STAINTON, Mountsfield, Lewisham, S.E.: *September 22nd*, 1881.

The larva of Eupithecia inturbata, Hüb., H.-Schf. (subciliata, Guen.).—On the 21st of May, by beating a maple-tree (*Acer campestre*), I obtained 5 larvæ of this species, and on another visit 4 larvæ, but on the 30th May no more were to be had, their time being over. The larvæ, in captivity, feed exclusively on the flowers of maple, with predilection for the organs of fructification; they remain quite openly thereon, it being in no way necessary to conceal themselves because their colour entirely accords with that of the flowers, and they are thus almost invisible to their enemies, as well as to entomologists. After a few days they prepared for their transformation, which ordinarily takes place in a spinning interwoven with grains of earth, on the surface of the ground. The first spun its cocoon on the 24th May, the last on the 29th, and 8 days after I found six well-developed pupæ, two imperfectly developed, and in one cocoon a dried-up larva. On the 12th July two male moths appeared, the four others, perfect females, between the 15th and 25th July. The development from the pupa-state occurred regularly between 4 and 6 o'clock in the afternoon. Having in former years captured newly-developed moths at the end of July and beginning of August this earlier appearance must be attributed to the tropical heat of this summer.

The head of the larva is very small, greenish-yellow; the colour of the body is that of their food; the markings consist of a somewhat sharp dark dorsal line and two lighter greenish-yellow sub-dorsal lines, the upper broader and stronger, the lower finer, the two separated by a dark line. The elevated, wrinkled lateral angle of the body forms also a light greenish- or whitish-yellow longitudinal streak, above which the spiracles appear as raised yellowish spots. Under-side and legs of the ground-colour. The pupa anteriorly rusty-yellow; the abdomen greenish. The chitinous pupa-case is so transparent that the development of the moth within can be followed from the first.—Dr. A. Speyer (*Abbreviated from the Stettiner entomol. Zeitung*, vol. xlii, p. 473: *September*, 1881).

[See also Ent. Mo. Mag., ix, 17, 65, and xiv, 68.—Eds.]

Occurrence of Nepticula sericopeza near Cambridge.—I had often examined the keys of maples about here (Cambridge) for mines of *Nepticula sericopeza*, but hitherto always without success. This year, at the end of August, I took shelter from rain under a solitary maple (*Acer campestre*) just outside the town, and although it was so late in the season, occupied the time in looking over the keys that were within reach. I soon found numbers mined and gathered a lot. The next day I went again and caught sight of a cocoon on an unmined key. Following this clue I soon found many more both on the keys and on the leaves of the maple, and also on the leaves of an elder bush growing beneath. When on a leaf they are in all cases on the upper surface, and when on the keys generally on the extreme tip. The cocoon when fresh is very bright yellow and very neatly spun. Some cocoons which I found were discoloured, dirty white or pink, but these afterwards proved to be empty. I naturally concluded that these cocoons would produce the imago next June, hence I was much surprised the morning after to see a fine *N. sericopeza* roaming about the bag, in fact, they have been emerging every day this month, one or two each day. I have now bred over two dozen with about an equal number of eggs on the keys—which are still green—so I imagine the second brood has still to feed up, or else there must be a succession of broods throughout the summer. I have found a few cocoons on other maples on the opposite side of the town, where I took a single imago some 20 years since. If the higher boughs of the tree on which I took these cocoons contained an equal number there must have been several hundreds on this one tree, as I gathered over six score from the branches that were within reach of my stick.

I believe the cocoon is described by Mr. Stainton as pink and attached to the *mined* key, but in no single case did I find this to be so. I cannot help thinking that the insect might be easily found in other places where the maples flower freely.—W. Warren, Merton Cottage, Cambridge: *19th September*, 1881.

[The original notice of this larva is by Colonel Goureau—Ent. Annual, 1864, p. 170—who found it feeding in the keys of *Acer platanoides*, and spinning its cocoon upon the mined key. He describes the cocoons as flat, *yellowish-white*, *white*, or *whitish-rosy*. In this case the infested keys had fallen to the ground unripe. The moths emerged at the end of June and beginning of July.—Eds.]

Occurrence of Gelechia scotinella, H.-S., in England.—In April of the year 1873, I collected a quantity of distorted shoots of sloe, from which, among several species of *Lepidoptera*, I bred, at the end of June and beginning of July of the same year, four specimens of a fuliginous *Gelechia* unknown to me. I delayed ascertaining if the species were known to others until I should have discovered its larva, which I hoped to do in the following spring; but when that time arrived circumstances precluded my searching for it, and, by degrees, the matter dropped out of mind. When putting my *Tineina* in order, early in this year, I came across the moths in question, and then forwarded two of them to Mr. Stainton, who obligingly determined them as the *Gelechia scotinella*, H.-Sch. Through the kindness of Prof. Zeller, Mr. Stainton was enabled to inform me that the species had been bred by Herr Sauber at Hamburg, from the same plant; also that the insect has been caught at Prague, Vienna, Jena, and Wiesbaden.

In Staudinger and Wocke's "Catalog," the species is placed before *G. sororculella.* Last spring I visited the place which had yielded me the larvæ, and collected a large number of similarly distorted shoots of the sloe, but none of the contained larvæ pertained to the species required.—J. E. Fletcher, Worcester: *September*, 1881.

Leaf-mining larvæ extracted by birds (?).—The larvæ of the genus *Tischeria* are frequently extracted from their mines by some small *bird*, as I imagine. The exit-hole is larger than would be made by the larva, and the cuticle around is torn, which would not be done by the larva. By the dimensions of the mine, the larva must be nearly full-fed at the time of extraction. The species I have observed most affected in this way are *T. angusticollella*, *dodonæa*, and *complanella*—the first most commonly.—Id.

[Mines of *Lithocolletis* may often be found torn open in a similar way. I fancy some of the Tits are the offenders.—H. T. S.].

Platyptilia dichrodactyla and Bertrami.—After the appearance of Dr. Jordan's first paper on the *Pterophori* of Europe and North America compared, in one part of which he made some references to the identity of the two plumes above named, I wrote him a few lines, embodying my experience of one of them, *dichrodactyla.* Dr. Jordan, in the kindest manner, desired me to communicate them to the Magazine, as he thought there were some points of interest bearing on the question of the identity of the two insects. Perhaps, no one in this country has had more practical experience of *P. dichrodactyla* than myself. I have bred it for a number of years. With us, it is the only species, *Bertrami* not having occurred in any part of our district. The larva (of which I sent examples this summer to Mr. South for figuring) feeds, with us, invariably in tansy. I have never found any trace in yarrow. The imago fades—especially out of doors—sooner than any other I have any experience of; for I never took an example at large which was not more or less bleached: generally, they are almost white. The examples which are bred indoors must be boxed as soon as possible, and killed; as even in the house, two or three hours of exposure suffice to make them decidedly paler. My only captures of *Bertrami* have been made at Witherslack, where it seems pretty abundant. Now, I never took a faded one; they were all well coloured: so, one would fancy that if they were identical, the food-plant must have caused a very complete alteration in the qualities of the colouring matter of the scales. We must not forget, too, that *dichrodactyla* is nearly a month later in appearance than *Bertrami*. For this I quote Mr. Stainton's remarks on the two species in this Magazine, vol. ii, page 137.

The colouring of the bred *dichrodactyla* is—in water-colour nomenclature—nearly pure Indian yellow, clearly marked and streaked with a pale shade of the same colour, and with the few costal and fringe markings and spots dark brown to black; the markings clear and decided, with invariably a very clear, small, black spot just below the fissure: in some examples also one above, united by a brown shade, as in *serotinus*.

The colour of *Bertrami* is shades of fawn-colour and brown, the darker shades indistinctly margined, mere washes of colour, not sharply laid on like those in *dichrodactyla*. The spot near the fissure, when present at all, is exceedingly faint.

The palpi, in *dichrodactyla*, are decidedly longer than in *Bertrami*. The hooked apex, which, in some specimens of *Bertrami*—probably females—is well-marked, and on which Dr. Jordan lays some stress, will be found, on close examination, to have a different shape in the two insects. In *dichrodactyla* the hook is much more emarginate on the lower side, so that it comes to a much finer point than in *Bertrami*.

One may easily see that, in localities where both species occur, the confusion that may exist among caught, or carelessly-bred, examples, which, when mixed up, will become almost hopelessly entangled.

The above points, in addition to the great difference—in bred examples—of the leg markings, so well defined by Mr. Stainton, give, in my opinion, strong grounds for their separation, even should the coloration of the larvæ be similar. *Dichrodactyla* does not hibernate in the imago state. The female oviposits at night—most usually quite after dark—with its abdomen thrust down among the disc florets of the tansy flowers. One egg will—probably—be laid in each flower, and the larva must emerge soon after (as the plant dies down in winter), and mine down the stem into the root, where it remains until the fresh shoots are thrown up in the following spring, up which it works as the plant grows; throwing out frass from the joints, and causing the whole plant to droop, very like the effects produced by the larvæ of *Exæretia Allisella* in the stems of *Artemisia vulgaris*, and becoming full-fed about the end of June.—J. SANG, Darlington: *October 8th*, 1881.

Obituary.

W. Garneys.—We record with deep regret the sudden death from apoplexy, on the 21st October, at Repton, near Burton-on-Trent, of Mr. W. Garneys, one of our oldest correspondents, who never relaxed his study of our indigenous *Coleoptera* in

NOTE ON *AËPOPHILUS BONNAIREI*, SIGNORET; A GENUS AND SPECIES OF *HEMIPTERA* NEW TO BRITAIN.

BY CHAS. O. WATERHOUSE.

Recently I took some British *Hemiptera* to Mr. Edward Saunders for identification, and the first species in the box he determined to be *Aëpophilus Bonnairei*, of Signoret. The specimens are marked in the late Mr. F. Smith's hand-writing, "Polperro, Cornwall," and they appear to have been mounted by him, but I cannot ascertain whether they were captured by him or not. A full description of the genus, accompanied by a good figure with details, will be found in the Tijdschrift voor Entomologie, 1880, p. 1, pl. 1; but the original notice is in the Bulletin de la Société Entomologique de France, 1879, p. lxxiii (*cf.* Ent. Mo. Mag., xvi, p. 68), where the species is said to have been found in the Ile de Ré, at low water, under stones deeply imbedded in the mud, and in company with the Coleopterous insect, *Aëpus Robinii.* It measures two lines in length, is of rusty-yellow colour, with dusky head and abdomen, the hemielytra a little longer than the thorax and acuminate. Its appearance is more that of a larva than an imago; and I am not sure that a non-Hemipterist might not at first sight mistake it for a narrow larval form of the common house-bug, *Acanthia lectularia.*

British Museum:
November 3*rd*, 1881.

ON TWO NEW SPECIES OF BUTTERFLIES FROM EAST AFRICA.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The two following species were obtained this year from a collection of *Lepidoptera* sent home by Sir J. Kirk.

NYMPHALINÆ.

CHARAXES KIRKII, *sp. n.*

♀. Intermediate in character between *C. Etheocles* and *C. Viola*, but most like the latter, from which it differs in the form of the ochraceous belt across the primaries, which agrees exactly with the white belt of *C. Etheocles* in shape; in the almost entire absence of the purple shot at the base of the wings; the primaries being suffused towards the base, at the apex, and along the external border, with rusty- or cupreous-brown; the greater width of the dark external area of these wings; the considerably narrower belt across the secondaries, which is almost central, tapers slightly towards the abdominal area, its inner edge straight, its outer edge slightly sinuous; the upper part clouded with ochreous, the lower half indistinctly bordered with lilac; owing to the narrowness of this belt, the external black area is of three times the width of that in *C. Viola*; the sub-marginal spots are smaller, and the red and green marginal border duller; abdominal area broadly pale greenish-grey: under surface altogether different, glaucous-grey, the black markings much more prominent, broader; a distinct white belt beyond the middle of the wings; the lunated red discal markings of the primaries replaced by a series of spots between the upper radial and sub-median veins, the first three indistinct, dusky, the last three black; the discal lunated series of the secondaries darker and duller, and the ill-defined band limiting the basal area on these wings narrower, less irregular, and better defined. Expanse of wings, 75 mm.

Mamboia, E. Africa (*Sir J. Kirk*).

By referring to my figure of *C. Viola* (Proc. Zool. Soc., 1865, pl. xxxvi, fig. 4), it will be easy to identify this insect; its proper location is evidently between this species and *C. Jocaste*, of Senegal.

TERACOLUS INCRETUS, *sp. n.*

♀. Very near to the female of *T. Auxo*, but considerably larger; all the dark brown markings better defined and broader, the external border of the primaries being decidedly broader, and the macular orange area between it and the connected series of discal black spots of little more than half the width, and much more arched; the discocellular spot of about four times the size; the discal markings of the secondaries so well marked as to indicate an irregular zigzag line, the first, second, and fourth divisions of which are dark brown, the last-mentioned being a cuneiform brown spot; the marginal spots very large: wings below altogether brighter and clearer in colour, the markings better defined; the discocellular spot of primaries pupillated with silver, that of secondaries consisting of a partially black-edged silver spot with ochraceous iris. Expanse of wings, 55 mm.

Mamboia, E. Africa (*Sir J. Kirk*).

The female of *T. Auxo* expands 43 millimètres, that of the closely-allied (if distinct) *T. Topha*, 42, that of *T. Keiskamma*, 43; so that *T. incretus* may be safely said to exceed all its nearest allies by 12 millimètres in expanse of wing.

British Museum: *October*, 1881.

DESCRIPTION OF A NEW SPECIES OF *SATURNIIDÆ* FROM THE GOLD COAST.

BY W. F. KIRBY.

ANTHERÆA MACROPHTHALMUS.

Expanse, 5 inches. Warm fawn colour, shading almost into salmon-colour on the hind-wings; fore-wings with the basal line consisting of a rather indistinct pinkish-white line, bordered with black within, straight across the cell, forming a without pupil, but enclosed by narrow black and pinkish-white lines, the latter with a few pink scales on the outside; sub-marginal line pinkish-white, near and almost parallel to the hind margin, very slightly undulated, and a little curved outwards at the anal angle; slightly bordered with black outside and with pink inside. Hind-wings with the basal stripe blackish, nearly straight, and ceasing before reaching the inner margin; eye large, nearly of the ground colour, pupil of moderate size, scaleless above, but scaled below, except its vitreous outer edge; this eye is surrounded with black, red, and pale pink rings, the latter broadest and produced into a pear-shape; the point rests on the basal stripe, and the opposite side extends nearly to the sub-marginal pinkish-white stripe, which forms a half-circle round the eye, and then turns downwards towards the anal angle; this stripe is indistinctly edged with pink within, but bordered with a black stripe of equal width on the outside.

In the collection of Mr. G. A. Higlett.

Notwithstanding its superficial resemblance to *Caligula Suraka*, Boisd., from Madagascar, this appears to be more closely allied to *Antheræa Hersiliæ*, Westw., from the Congo, than to any other described species.

British Museum:
October, 1881.

DESCRIPTION OF THE LARVA OF *SCOPULA LUTEALIS*.

BY WILLIAM BUCKLER.

It is a great satisfaction to have figured, and to be able to strike off another *Pyrale* from my desiderata, and for this I render many grateful thanks to Mr. W. H. B. Fletcher, who most kindly sent me three examples of this larva on 28th of June last.

They were feeding on tender leaves of some species of *Rubus*, and with me they partook freely of *R. corylifolius* and sparingly of *Stachys sylvatica*.

In course of a week they spun up amongst the bramble leaves, and the first two moths emerged on 18th of July and the third on the 21st, all three males.

From a previous account of this larva I was prepared to expect a close resemblance to that of *prunalis*, and was the more agreeably surprised to see how very distinctly different they were in point of colouring,—though in form and design they agreed with that species.

When I received them they were all three alike, though two were nearly full-fed, while the third larva was in perfect condition and beauty of colour; and I venture to suppose that the notes taken at the time it was figured may perhaps have some interest.

The length of the full-grown larva is three-quarters of an inch or a trifle more, the form tapering much anteriorly and a little posteriorly, the well-defined segments plump on the belly, and subdivided on the back near the middle of each by a deep wrinkle; the colour of the head is pale semi-pellucid yellowish-brown blotched with a deeper tint of the same, the second segment is of a bright transparent yellowish-green, and near the end of this two sub-dorsal stripes begin at first as mere lines, but gradually widen through the third and fourth and from thence are uniformly very broad of opaque *primrose-yellow*, relieved above by a narrow dorsal stripe of the transparent green, and below by another stripe of this colour which melts into the pale whitish-greenish tint of the belly just where the pale tracheal thread shows faintly; the anal flap is of sulphur-yellow; the pale spiracles extremely small; the slightly raised tubercular warts are of the ground colour where they occur, but those on the yellow have a central dot of green, and from each wart proceeds a fine pale hair; the skin is glossy throughout. In short this larva is extremely like that of its congener *prunalis*, but with the important and striking difference that the sub-dorsal regions are primrose-yellow instead of white.

When quite full-fed it loses its distinctness of colours and becomes just before spinning up of a semi-transparent light amber-yellow all over.

The cocoon is the lining of a cavity formed by folding down the side of a leaf or otherwise contrived between two leaves, made of white silk, thin but strong, of oval form, and half-an-inch in length: the pupa is three-eighths of an inch long, broadest across the well-produced thorax, the wing-covers of moderate length, the leg- and antenna-cases a little longer and free at the end, the fixed segments of the abdomen are slightly keeled on the back and have very large spiracles, while those on the movable and tapering segments are of ordinary size, each segment has five or six transverse ridges, the most prominent being at the hind edge; the anal tip ends in a pointed and flattened prolongation furnished with curly-topped converging spines firmly fixed in the silken cocoon; the whole surface is black, and dull generally, though glistening a little on the back, and is only really glossy on the two hinder segments; moreover, with a strong lens a few fine hairs are just visible, that is, one from each wart where these traces of the larval skin still remain.

DIPTERA OF THE NORFOLK BROADS.

BY G. H. VERRALL.

During the last half of June, I had the opportunity of collecting among the Norfolk and Suffolk Broads, and a list of my captures, with a few notes, may be of interest. The neglect this district has experienced of late years, and the astonishing ignorance as to its character and extent, which so widely prevails, are, I suppose, attributable to the late inaccessibility except by boat; but by making Yarmouth the head-quarters, and using the new East Norfolk Railway, many of the Broads, such as Hickling, Ormesby, Filby, and Martham, are fairly accessible, and this is by far the most convenient method of working the district, as scarcely any accommodation can be obtained in the villages. The lakes are grand sheets of shallow fresh water, with reedy, marshy, or well-timbered edges, affording most perfect spots for a naturalist to work on, and they have apparently changed but little for many centuries, hence they teem with life both entomological and ornithological.

My hopes of obtaining some novelties to Britain were not doomed to disappointment, as besides what may remain among my unnamed *residuum*, I certainly obtained in quantity one very lovely *Dolichopus (Gymnopternus chalybeus*, Wied.) quite new to Britain, and a specimen of the curious and puzzling *Graphomyia picta*, Zett.

As localities for English *Diptera* are very few, I give a full list of the species I have recognised: when no locality is given, the species may be considered of general distribution.

- Microchrysa polita (Hickling)
  - flavicornis (Hickling)
- Sargus infuscatus (Martham)
- Beris vallata (Hickling)
- Hæmatopota pluvialis
- Leptis scolopacea
- Chrysopilus auratus
- Thereva annulata (Sandy Coasts)
  - bipunctata (Cromer)
- Dysmachus trigonus (Lowestoft)
- Empis stercorea (Fritton)
- Hygroceleuthus diadema (Lowestoft)
- Dolichopus vitripennis (Hickling)
  - atratus (Hickling)
  - lepidus (Hickling)
  - nubilus
  - claviger (Fritton)
  - plumipes
  - pennatus
  - popularis
- Dolichopus signatus (Martham)
  - urbanus (Fritton)
  - nitidus (Martham)
  - griseipennis (Martham)
  - sabinus (Lowestoft)
  - simplex
  - brevipennis
  - æneus
- Gymnopternus cupreus
  - celer (Martham)
  - metallicus (Fritton)
  - chalybeus (Martham) [1]
  - ærosus
  - assimilis(Martham&Hickling) [2]
  - nanus (Ormesby & Fritton)
- Hypophyllus obscurellus (Fritton)
- Argyra diaphana
  - argentata (Martham)
  - leucocephala (Fritton)
- Synarthrus pallipes (Lowestoft)
  - monilis (Hickling)

Chrysotus cupreus (Martham)
neglectus (Martham)
gramineus (Martham)
Sympycnus annulipes
Campsicnemus scambus (Martham)
curvipes
armatus (Lowestoft)
Liancalus lacustris (Lowestoft)
Hydrophorus bipunctatus [3]
litoreus (Martham & Ormesby)
præcox (Ormesby)
viridis, *Mg.*? (Ormesby) [4]
Medeterus petrophilus, *Kow.*? (Cromer and Lowestoft)
Thrypticus bellus (Ormesby)
Xanthochlorus ornatus (Fritton)
Pipizella virens (Ormesby)
biguttata (Martham)
Pipiza noctiluca (Ormesby)
Chrysogaster splendida (Martham) [5]
splendens (Ormesby)
Macquarti (Hickling)
chalybeata (Martham&Hickling)
cæmeteriorum (Martham)
Chilosia pulchripes (Hickling)
chloris (Ormesby)
flavimana (Hickling and Martham)
variabilis (Hickling and Martham)
Pyrophæna ocymi (Ormesby and Martham)
rosarum (Martham)
Platychirus manicatus
albimanus
peltatus (Hickling)
fulviventris (Martham) [6]
Syrphus auricollis (Martham)
corollæ
latifasciatus (Martham)
Sphærophoria picta
Ascia floralis [7]
Rhingia rostrata
Volucella bombylans
Eristalis sepulchralis (Ormesby)
intricarius (Martham)
horticola (Ormesby)
Helophilus hybridus (Ormesby and Martham)
pendulus
versicolor (Ormesby & Martham)
frutetorum (Ormesby & Martham)
transfugus (Martham)
lineatus (Ormesby and Martham)
Xylota segnis (Martham)
Thelaira leucozona
Sarcophaga carnaria
melanura (Lowestoft)
Graphomyia maculata
picta (Martham) [8]
Calliphora grœnlandica (Lowestoft) [9]
Morellia curvipes (Hickling) [10]
Polietes albolineata (Hickling)
Hyetodesia lucorum
incana (Hickling and Ormesby)
errans (Lowestoft)
rufipalpis (Ormesby and Fritton)
basalis
Mydæa pagana (Fritton)
urbana
quadrum (Fritton)
Aspilia allotalla (Martham)
Hydrophoria conica
Hylemyia strigosa (Fritton)
nigrimana (Fritton)
Anthomyia pluvialis
inanis (Martham)
Homalomyia canicularis
Lispe tentaculata
Actora æstuum (Yarmouth)
Dryomyza flaveola (Fritton)
Tetanocera ferruginea (Hickling)
reticulata
Sepedon spinipes (Hickling)
Calobata cibaria (Fritton)
Trypeta cylindrica (Martham)
Oxyphora miliaria
Balioptera tripunctata (Yarmouth)
Scatopse halterata
Pericoma nubila (Fritton)
fusca (Fritton)

NOTES.

(1) *Gymnopternus chalybeus,* Wied.—This is a rather large dark purplish insect with darkened wings, utterly unlike any other European species. The cilia behind the eyes are all black, the antennæ shortish, yellow at the base, 3rd joint tri-

abundant amongst the low herbage, and on the water dock, on the marshy flat land at the northern end of Martham Broad. The *D. chalybeus* of Stephens' list was, probably, as Haliday remarks, the *D. chalybeus* of Meigen, which is only a variety of *D. æneus*, Deg.

(2) *Gymnopternus assimilis*, Stæg.—I am very suspicious that we have more than one species under this name. True *G. assimilis* resemble *G. ærosus*, Fall., but have a silvery instead of black face, but the specimens caught here, besides some others I possess, have also the lamellæ of the hypopygium reddish instead of blackish. The British species of this genus will well bear close examination; to the eleven in Walker's Insecta Britannica, I have now added nine, one of which, however, (*G. angustifrons*, Stæg), though named by Loew, is, I fear, only a small *G. cupreus*, Fall.

(3) *Hydrophorus bipunctatus*, Lehm.—When a slight ripple prevented this species from running about freely on the water, it was in countless thousands on the edges of the lakes.

(4) *Hydrophorus viridis*, Meig.—True *H. viridis*, Mg., has a white face; however, a specimen I once caught at Hendon, which was named *viridis* by Loew in spite of an orange face, is clearly identical with the *one* specimen I caught at Ormesby. At Martham I caught *one* other specimen with an orange face, but this is clearly distinct, and the same as a species of which I once took *one* at Seaford. I do not like to describe new *Hydrophori* from such poor material, and I possess a third species in *one* specimen from the little stream which crosses the road at the foot of Loch Callater, which seems undescribed. Of all the other British *Hydrophori* I possess full series.

(5) *Chrysogaster splendida*, Mg.—I have no doubt as to the naming of this species (new to me), though the tarsi show but very faint signs of yellow, yet the reddish under-side of the third joint of the antennæ clearly distinguishes it from *C. metallina*, F.; I failed to distinguish it when catching it.

(6) *Platychirus fulviventris*, Macq.—This species is readily distinguished from its allies by its entirely yellow femora and tibiæ; also, from *P. scambus*, Stæg. and *P. immarginatus*, Zett., by the tolerably abundant equal pubescence behind the front femora; those two species having about six long black hairs extremely distinct from the shorter pubescence. It agrees with these two species in the large extent of the yellow spots on the abdomen, and therefore differs in this from *P. clypeatus*, Mg., *angustatus*, Zett., and *podagratus*, Zett., all of which also have the hind femora and tibiæ with a broad blackish ring. I caught only one at Martham, but I find I took one a year ago at Burwell Fen.

(7) *Ascia floralis*, Mg.—This was very abundant at Martham, and had all the usual variations, which I cannot help thinking include *A. quadripunctata*, Mg., and *A. dispar*, Mg., and possibly even more so-called species.

(8) *Graphomyia picta*, Zett.—I captured one male of this at Martham Broad. The first notice of this supposed species was made by Zetterstedt, in 1845, under *Cyrtoneura maculata*, Dipt. Skan., iv, 1356, as a singular variety of the male, in which that sex has the colouring of the female. He, however, speaks of it as taken by Wahlberg in one place "(Cedershal prope Holmiam) in pluribus exemplis." Wahlberg subsequently (1852), in the notes of his travels, incidentally mentioned it

as *C. cœrulescens*, and Zetterstedt, in 1855 (Dipt. Skan., xii, 4715), fully described it as a separate species, *Cyrtoneura picta*, professing to recognize some other slight differences, such as whiter alulæ, narrower frontal triangle, less oblique transverse vein, &c. He had apparently then seen several specimens from Sweden and Lapland. I believe there is no notice of its having occurred elsewhere, and, though I consider the specimen of extreme interest, I must still hold doubts of its specific rank.

(9) *Calliphora grœnlandica*, Zett.—The common oblong, somewhat flattened, dark blue *Musca*, common in London, and apparently occurring all over England and Scotland, existing in English collections sometimes as *M. equestris*, sometimes *M. illustris*, and sometimes *M. azurea*, is, I believe, Zetterstedt's *C. grœnlandica*, as the palpi are yellowish, and the thorax and abdomen all of one colour in both sexes.

(10). *Morellia curvipes*, Mcq.—All (4♂) belong to a small var. I find this species common in numerous localities.

Sussex Lodge, Newmarket:
October, 1881.

NOTES ON BRITISH *TORTRICES*.

BY C. G. BARRETT.

(*continued from Vol.* xvii, *p.* 267).

In this Magazine for 1869 (vol. vi, p. 113), I recorded the curious habit of a larva which I had found feeding in berries of *Rhamnus frangula* at Haslemere, and, when full-fed, forming a case out of a piece of the leaf, in which to pass the winter, and stated my reason for believing it to be that of *Eupœcilia ambiguella*.

As far as I know, this observation remained for more than ten years unchallenged and unconfirmed, so it will not be difficult to imagine the pleasure with which I received, in the summer of 1880, a letter from my energetic friend, Mr. W. H. B. Fletcher, in which he wrote: "I came down to the New Forest for a week in March, and, when searching for cases of *Coleophora ahenella* on the *Rhamnus frangula* stems, I found some queer bottle-shaped cases on the stems, formed of a piece of dead oak-leaf or bracken-frond. Towards the end of April, a fine *ambiguella* came out indoors. It seems a queer idea that the larva should feed on *Rhamnus*, then take the trouble to go to the ground to make a case of oak or fern, and then return to the stems to hibernate and pupate."

This was gratifying, and I begged Mr. Fletcher to search for larvæ in the berries, in the summer. This he did, and sent me a grand supply of berries containing scores of larvæ. These larvæ were slughardly perceptible; spots large, shining, and prominent, slightly darker than the body, but apparently without hairs; head and dorsal plate shining jet-black; anal plate light brown; anterior feet black. Very little change in colour during growth until full-fed, when the reddish tinge was sometimes assumed. Feeding inside the unripe berries of *Rhamnus frangula*, hollowing out the hard seeds as well as eating the pulp, and, when one berry was exhausted, fastening it to another with white silk, the same operations being continued until several berries were united together and their contents eaten; but the first emptied berry being used as the habitation, and frass extruded through a hole in it. Sometimes the berries were also strongly joined to dead or living leaves, which, however, were not eaten. These larvæ seem to have fed through July, since some were full grown on the 29th, while others continued to feed until the middle of August. They were not supplied with dead leaves, other than the drying *Rhamnus* leaves, and, when full-fed, they left the bunches of berries and rolled up portions of these leaves into cylinders, cutting off portions of these cylinders to form cases. These cases were roughly formed, and the edges not carefully joined; but the larvæ carried them about until they settled down on the sides of the pots or the gauze covers for hibernation. Great care was taken to afford them as natural a condition for passing the winter as was possible, but the result was very meagre, only two specimens survived the winter, and emerged in the following spring. The cold was unusually intense, and nearly all my hibernating *Tortrix* larvæ perished. The difficulty of wintering them is always very great. I could not find that any other larvæ in the cases entered the pupa state.

It does not, however, seem certain that the larva of *ambiguella* always follows the general rule among this group of *Tortrices*, of hibernating in the larva state. Mr. Fletcher's subsequent observations on this point are of so great interest, that I venture to quote them *verbatim*:

"I spent March 3rd to 10th, 1880, in the New Forest, partly that I might search stems of *Rhamnus frangula*; when so doing, I found a few cases which afterwards yielded the moth in question: one of these cases I opened to see if the tenant were Lepidopterous, this case certainly contained *a larva*. I took several more cases in the *autumn* of 1880, and opened six or seven; *all these contained pupæ*. A local collector also called my attention to these pupæ, because I had told him the larva did not change till the spring. These are the 'facts of the case,' so far as they have come under my eye. I can only guess they are remnants of the many-broodedness of the insect on the continent. 1879 was a cold, wet season, hence *ambiguella* may have only meant to do a single brood, and so did not pupate until the spring of 1880. August, 1880, on the other hand, was hot and dry. May not the larva have thought to run through another cycle of existence, and have accordingly pupated, and had its further development stopped by the break-up of the weather about September 10th? However, these are but guesses. The larva is not dainty as to the material of its case, some use the leaf of *Rhamnus*, others that of the oak or a piece of the bracken-frond; I have one made of the bark of the honeysuckle, and another has tacked a 'hair-pin' from the Scotch fir to its case."

Here is material for thought!

It is singular that continental authors make no mention of these cases. Dr. Hofmann quotes Von Roser's "*Observations on the worm of the Grape.*—Red-brown, with four pale, somewhat transparent spots on each segment, and a tuft of hair in the middle. Head dark brown. In several generations on vine. The first brood in the flowers which it draws together, the second in the unripe, and the third in the ripe berries (grapes), out of which the excrement is observable. It is very mischievous. It pupates in the flowers or on the stem. Imago in from fourteen to eighteen days, the last brood emerging in the spring."

This does not seem to agree very well with our insect, yet the perfect insects are precisely alike, and Prof. Zeller assures me that *ambiguella* is found on the continent in woods where there are no vines, as well as in the vineyards.

Pembroke: 12*th November*, 1881.

ON CERTAIN SOUTH AMERICAN *DELPHACIDÆ*.

BY JOHN SCOTT.

Dr. C. Berg, Professor in the University of Buenos Ayres, was so kind as to forward me a copy of his work the "Hemiptera Argentina," a review of which appeared at page 90 of the present volume of this Magazine, and, having carefully perused the same, I observed that he had described a *Liburnia* under the name of *cognata*, a name previously given to a species of this genus by the late Dr. Fieber. I thereupon wrote to him calling his attention to the fact, and requesting him to be good enough to permit me to see all his species of this

Fieberian Catalogue, I have returned, and have left Professor Berg to deal with them as he sees fit in his forthcoming volume of Addenda, with the exception of the following:—

Family DELPHACIDÆ.

EUIDES FUSCO-VITTATA, *n. sp.*

♀. Pitchy-brown. *Head: crown* pale brown, pale straw-yellow at the base; *frons* and *face* pitchy-brown; *keels* pale brownish-yellow, lower margin concave, somewhat yellow: *clypeus* brownish-yellow: *antennæ* yellowish or pale brownish-yellow, 2nd joint granulated. *Pronotum* shining, pale straw-yellow, sides brown from a little way beyond the extremities of the keels. *Scutellum* shining, pitchy-brown. *Elytra* clear, transparent; *corium*: nerves yellowish, finely granulated, nerves of the apical areas black, finely granulated; *clavus* with a longitudinal brown streak down the area, enclosed between the anal nerve and suture, apex of the area enclosed between the anal nerve and dorsal margin with a short black streak. *Legs* yellow. *Abdomen* above black, three or four terminal segments on the sides broadly yellow. Length, 2¼ lines.

I have only seen a single female example which, by the character on the elytra alone, differs from all the species known to me.

The insect described by Professor Berg under the name of *Liburnia nimbata*, has really nothing whatever to do with the genus, nor, indeed, with any of the other genera of *Delphacidæ*, and I have, therefore, characterized it as follows:—

BERGIA, *n. g.*

Head: crown barely twice as long as broad, with a longitudinal central, and two short keels, in front, the latter almost joined in the middle of the anterior margin: *face* nearly equal in length to the breadth between the antennæ, with two longitudinal keels slightly widening from the lower margin of the frons to the apex; *clypeus* about as long as broad, measured across the base, without a central longitudinal keel; *antennæ*: 1st joint about half the length of the 2nd; *eyes* somewhat large. *Pronotum* with a central longitudinal, and two side, keels, posterior margin concave across the scutellum. *Scutellum* triangular, apex acute, with five longitudinal keels, the central one not reaching to the apex, and the side ones vanishing before reaching the side margins. *Elytra* as in *Cixius*, *Oliarus*, &c., but the furcate apical areas are longer than in these genera. *Legs: tibiæ*, 3rd pair with three spines on the outer margin, nearly equidistant from each other, placed, one at the base, another before, and the 3rd beyond, the middle; *tarsi*: 3rd pair, 1st joint almost twice as long as the 2nd.

This genus appears to be one of the connecting links between the *Delphacidæ* and the *Cixiidæ*. The head is somewhat similar to *Euides*, as viewed from above, but the broad face with its two keels completely shuts out any relationship with that genus. The scutellum with five keels brings it near to *Oliarus*, but the face here is also totally different in form. It also bears some slight resemblance to *Ugyops Kinbergi*, Stål (Eugenies Resa, 274, 156, tab. iv, fig. 2), but the crown and antennæ are much too long, and the keels on the face entirely dissimilar; the hinder tibiæ alone bearing spines, as in this new genus.

I have much pleasure in naming the genus after Dr. C. Berg, for his kindness in forwarding to me his specimens of this group.

LIBURNIA BERGI.

The name *Liburnia cognata*, Fieb., having been unknown to Dr. Berg when he published his work, I propose to re-name his species of this name *Liburnia Bergi*, and so get rid of any confusion, although I believe Fieber's species to be *L. Aubei*, Perris.

Lee, S.E.: 13*th November*, 1881.

NEW *CETONIIDÆ* FROM EAST CENTRAL AFRICA.

BY H. W. BATES, F.R.S.

The following interesting species, new, with the exception of *Ceratorhina princeps*, of which the ♀ has previously been made known, are from the neighbourhood of Mamboia and Mpwapwa, villages situated in wooded districts at 3000 to 4000 feet elevation, in Eastern Africa, 160 and 200 miles distant, respectively, from the coast at Saadani.

HYPSELOGENIA CORROSA.

♀. *Breviter ovata, castaneo-fusca, fronte elongata concava, scabroso-punctata medio tuberculata, marginibus acutis elevatis, ante oculos verticaliter angulatis, clypeo late bidentato: thorace brevi, transverso, lateribus fortiter rotundatis, margine antico supra caput elevato, postico ante scutellum minime sinuato, grossissime hic illic confluenter punctato, margine lato guttisque nonnullis ochraceo-tomentosis: elytris grossissime, confluenter, latera versus sub-seriatim, punctatis, costis vix distincte elevatis; margine apicali lituris transversisque ochraceo-tomentosis: subtus castaneo-rufa, punctata, abdomine utrinque fasciis quatuor ochraceis.* *Long.* 10 *lin.*

CERATORHINA EUTHALIA.

♀. C. Smithii *affinis, sed differt elytris planioribus, thorace multo distinctius punctulatis: fronte, thorace, scutello, corporeque subtus læte prasinis; clypeo femoribus tibiisque rufis, tarsis nigris, elytris flavis utrinque maculis duabus (humerali et apicali) nigris.* *Long.* 18 *lin.*

CERATORHINA PRINCEPS (*Oberthür*).

♂. C. guttatæ (*Oliv.*) *similis sed multo magis convexa; clypei cornubus*

horizontaliter producto bidentato: læte castaneo-fulva, viridi-æneo relucens, thorace magis viridi, nitido, convexo, medio nigro bipunctato: elytris ut in C. guttata *utrinque guttis circa* 13 *ochraceo-tomentosis.* *Long.* 12—15 *lin.*

M. René Oberthür, in Ann. Soc. Ent. Fr., 1880, Bull. p. cxix, briefly described the ♀ of this most interesting species.

CERATORHINA BURKEI, *var.* HISTRIO.

♂ ♀. *A* C. Burkei *differt utroque sexu thorace angustius albo-marginato vittaque dorsali rufa, et elytris maculis oblique geminatis discoidalibus longe distantibus.*

ECCOPTOCNEMIS RELUCENS.

♂ ♀. E. Thoreyi *robustior et convexior, rufo-castanea, nitida, thorace lateribus alutaceo-opaco, tibiis et tarsis nigris, elytris viridi relucentibus, ubopalescentibus.* *Long.* 11—16 *lin.*

HETERORHINA (ANISORHINA) LÆVICAUDA.

A. flavomaculatæ *proxime affinis; minor, gracilior, et fascia flava postica angustiori, per elytrorum apicem fere ad suturam continuata, area politissima includenti, distinctissima.* ♀. *Tibiis anticis extus bispinosis. Coloribus ut in* A. flavomaculata. *Long.* 10 *lin.*, ♂ ♀.

HETERORHINA (ANISORHINA) ELONGATA.

A. umbonatæ *coloribus simillima, sed differt corpore multo magis elongato capiteque* ♂ *suprà carina angusta mediana, clypeoque margine fortiter recurvo bidentato. Elongata, subtus nigra, nitida, sternis lateribus, abdominisque apice fulvis, thorace castaneo-rufo, polito, medio nigro, lateribus sparse punctatis; scutello fusco-castaneo: elytris suprà planatis, striis punctatis, geminatis, subtilibus, interstitiis sparsim punctatis, flavo-testaceis sutura fusca; pedibus rufis:* ♀ *tibiis anticis extus tridentatis.* *Long.* 7—11 *lin.*, ♂ ♀.

HETERORHINA TRICOLOR.

♂. H. speculari *similis, sed brevior et latior, nigra, nitida, thorace sanguineo vitta mediana nigra, elytris vitta lata laterali (callum humeralem haud tegenti) maculaque sub-apicali prope suturam, flavis: abdominis segmentis duobus terminalibus rufis, medio nigro-maculatis: clypeo quadrato, margine antico obtuse bidenticulato, fronte concava sub-lævi, cornu occipitali porrecto paullulum elevato: thorace (medio lævi excepto) elytrisque sparsim punctatis.* *Long.* 8 *lin.*

PLÆSIORHINA UNDULATA.

A Pl. plana *differt colore castaneo-fulva, viridi-ænea tincta, fasciaque flava angusta undulata et nigro-marginata. Oblonga, deplanata, nitida, thorace crebre, elytris sparsius et subtilius punctatis, vitta flava marginali pronoti angulum posticum attingenti; capite corpore subtus pedibusque pallidius fulvis, æneo-tinctis.* *Long.* 11½ *lin.*

40, Bartholomew Road, Kentish Town, N.W.:
November, 1881.

Coleoptera at Chirique.—A little while ago I had a short letter, dated September 5th, from Mr. G. C. Champion, who has so long been collecting *Coleoptera*, &c., in Guatemala: he says that he is now located in the department of Chirique, adjoining Costa Rica; for the last four months he had been working the forest on the slope of the volcano of Chirique: he had already collected perhaps 1000 to 1500 species, by far the greater majority of which were identical with those of Guatemala: still he has taken many nice additions in *Coleoptera*—various *Cicindelidæ*, *Lebiidæ* (many species), *Lampyridæ*, *Lycidæ*, *Chrysomelidæ*, *Halticidæ*, *Hispidæ*, *Cassidæ*, *Longicornes*, *Lamellicornes*, *Brachelytra*, &c. Mr. Champion asked me to notify his change of address from Guatemala to David, Chirique, U. S. Colombia.—W. W. Fowler, Lincoln: *November 14th*, 1881.

Phytosus balticus, &c., at Mablethorpe.—Last August I spent a short time at Mablethorpe on the Lincolnshire coast, and I found a few *Coleoptera* that are perhaps worth recording: perhaps *Phytosus balticus* in considerable numbers below high water mark is the best. *Phytosus spinifer* also occurred in the same locality, but not nearly as plentifully. I believe that the *Phytosi* have not before been recorded from Lincolnshire. On the sand-hills one of the commonest beetles was *Demetrias monostigma*, which I had never before taken. ***Thyamis marcida*** was fairly abundant, and *Psylliodes chrysocephala* very plentiful, the var. ***nigricollis*** being rather rare. I also took on the sand-hills *Taphria vivalis*, *Ceuthorhynchus asperifoliarum*, *Otiorhynchus muscorum*, *Meligethes viduatus* (kindly determined for me by M. Brisout), and other things. In a dyke I found *Hydroporus assimilis*, *Philhydrus testaceus*, *nigricans*, and *ovalis*, and many common water-beetles. The only Hemipterous insect I noticed was *Orthostira parvula* in some numbers in moss on the sand-hills.—Id.

Captures of Coleoptera in 1881.—The following notes on my captures during the past season may, perhaps, be of interest.

At Dulwich: *Dromius 4-signatus* (3), *Pterostichus picimanus* and *inæqualis*, *Bembidium obliquum* (on the banks of a small pond), *Aleochara lata*, *Tachinus scapularis* (3), *Ochina hederæ*, *Apion cruentatum*, *Phyllotreta ochripes* (the commonest of the genus), and *Psylliodes chrysocephala*, var. *nigricollis*, were, perhaps, the best.

West Wickham produced *Badister sodalis; Calathus piceus; Stenolophus teutonus; Hydroporus marginatus* (one specimen, found in the sweeping net!); *Mycetoporus lucidus; Staphylinus stercorarius* (three, in cow-dung); *Ocypus fuscatus* (three, beneath stones); *Antherophagus silaceus*; *Aphodius putridus*, *Zenkeri*, *porcus*, and *obliteratus; Opilus mollis*, *Hedobia imperialis*, *Salpingus castaneus* (common on pine), *Ceuthorhynchideus horridus*, *Cionus pulchellus*, *Tychius venustus*, *Otiorhynchus muscorum*, *Barynotus obscurus*, *Prasocuris aucta* (several at roots of trees, in February), and *Coccinella hieroglyphica* (a few, on heather), and *ocellata* (common on pine). *Aphodius porcus* was in the greatest profusion in one particular field. I took in all one hundred and sixty specimens, and might easily have captured double the number, had I felt inclined. By far the greater proportion of

At Boxhill, during a hurried visit at the end of May, *Lema puncticollis*, *Lamprosoma concolor*, and *Cryptocephalus coryli*, turned up in the sweeping net.

From Belvedere, Kent, I obtained *Hylotrupes bajulus* (2) and *Donacia lemnæ* in abundance.

A visit to Aylsham, Norfolk, for a fortnight in May, produced *Brychius elevatus*, *Liopterus ruficollis*, *Cercus bipustulatus* (plentiful), *Poophagus sisymbrii*, *Orchestes ilicis*, *Donacia dentipes* (common), and *Phyllotreta tetrastigma* (several).

Among some insects collected for me by a friend, was a fine female specimen of *Prionus coriarius*.—Theodore Wood, 5, Selwyn Terrace, Jasper Road, Upper Norwood, S.E.: *November*, 1881.

A note from Japan.—The extract I give below from a post-card recently received from Mr. Lewis is interesting anthropologically, as well as from a naturalist's point of view. That an Englishman should be successfully pursuing Natural History researches in the interior of Japan, and that he should be able to transmit thence information of his successes on a post-card in the course of eight weeks to Scotland, is a most striking illustration of the progress of civilization.—D. Sharp, Thornhill: *October*, 1881.

"Chiuzenji: *August* 21*st*, 1881.—There is something curious even now in being able to send you a post-card from the forests of central Nipon, but here I am writing by the margin of a lake 4000 ft. above the sea, with mountains around it covered with vegetation, and rising another 4000 ft. at least. My last captures include a very nice *Miscodera*, and an *Atemeles*, very near *paradoxus*. The lake is 600 ft. deep, and has, in January, a belt of 20 ft. of ice; as you walk along the edge you displace the loose stones, and they fall into the water, and where your foot has been, wet stones are exposed: under these stones are water-beetles, quite secure from the small, but almost continuous waves of the lake. But neither species nor individuals are numerous, and a couple of hours' work does not produce many

* * * "

Sericomyia borealis "singing" while at rest.—Last spring I inserted a note on the occurrence of *Sericomyia borealis*, Fall., in Sussex (Ent. Mo. Mag., April, 1881), and soon after received a letter from Mr. W. Grant Guthrie, of Hawick—he wrote as follows: "I venture to ask if you can give me any information as to the life-history of this insect; in particular if the strange singing noise emitted by the insect when at rest, and apparently motionless, is produced by the ♂ alone." I know nothing previously of this habit, and all I have been able to do is to corroborate Mr. Guthrie's statement, that the "strange singing noise" is made by the male.

When at Dallington this year (Aug. 18) I mentioned to my companion, Mr. H. F. Collett, this curious habit as described by Mr. Guthrie. He was fortunate enough almost immediately to take a specimen of this insect "making the singing noise when apparently at rest"—this proved to be a male. We saw no other example of the species. It therefore still remains doubtful whether the female also emits this sound, while I have ascertained nothing more of its life-history. Can any of your readers supply information on these points?

Since writing the above notice, I have heard from Mr. W. G. Guthrie, who has kindly communicated the circumstances which first called his attention to the subject. I give an extract from his very interesting letter: "About the middle of August last year, while showing my collection of insects to Mr. Peach, of the Government Geological Survey, he gave me a humorous account of a fly which had amused his party while surveying in Yarrow. They had seen it mostly about the cairns on the tops of the hills. He imitated its singing, and described it as like a wasp, only twice the size. I was convinced it was something I had never seen before, and could only think of the hornet, though if it were to occur so far north it would scarcely make its appearance in such a situation. I felt interested, and determined to try and find it.

"Yarrow, the locality mentioned, was, however, at too great a distance (twenty or thirty miles) for me to reach; but I bethought me of a hill nearer at hand (fourteen miles) having something of the same physical features, with an altitude of 2000 feet, and covered with peat to the top. This hill I visited on the first opportunity, and had been on the summit only a few minutes, when I saw a fly alight on a stone, but it was so much smaller than I expected, that I did not at first pay much attention to it. I heard the singing too, but thought it came from a great distance.

"It was some time before I made out the connection between the fly and the sound; when I did so I got excited, made a dash with my net, and—missed! I waited a long while in hopes of another chance, but had to return home without the prize. The next Saturday I went back, and found the fly on exactly the same stone; afraid of losing it again, I did not give myself much time for observation, but captured it at once, thinking to pay more attention to the next, but never saw another. I am sorry to say that the weather this season has prevented me from making any further observations."

I may add, that Mr. Verrall very kindly determined the insect to which Mr. Guthrie refers, and concluded his note thus, "The *Sericomyia* is a ♂, probably the singing sex."—E. N. BLOOMFIELD, Guestling Rectory: *November* 11*th*, 1881.

[We shall be glad to know if this habit in *Sericomyia* has been previously recorded.—EDS.].

Capture of rare Hymenoptera on the south coast of England.—Halictus quadricinctus, Fab.—On the 3rd of September I captured four males and about a dozen females of this species on the Brighton Downs, near Falmer. Also a few of the latter only near Eastbourne. Mr. F. Smith, in his "Bees of Great Britain" (1855), and again in his second edition (1879), observes, that "Mr. Kirby, on the authority of Dr. Latham, quotes this bee as a species of the London district (1802), but no one has met with it since to my knowledge. Mr. Dale took the female in the Isle of Portland some years ago, with the exception of which, not a single specimen of either sex has been taken for many years."

Bombus soroensis, Fab.—I took two males of this species (corresponding with the *B. collinus*, Sm., *olim*) in widely distant localities near Brighton, on the 1st and 3rd of September; the first on field-flowers by the road side near Ovingdean, the second on *Rubus* near Falmer. Mr. Smith, in his first edition aforesaid, says, "The met with *Bombus soroensis* for the first time at Southend, and obtained all the sexes in that locality. Having diligently collected during the last twenty years, without meeting with this species, it is probable that it is extremely local, and that its communities are small." But in his second edition, he concurs with Thomson (Hymenop. Scadin.) in giving the *B. callumanus* as a "distinct species," and in substituting the *B. collinus* of his first edition as the male of *B. soroensis*; while reiterating, in *both* instances, the reference to his former captures at Southend, and to other specimens obtained by Mr. Walcott from the Brighton Downs.

Colletes picistigma, Thoms.—Five specimens of the male of this species, new to the British fauna, were taken by me on chamomile flowers in August, along the undercliff near Chewton, Hants. I did not meet with any of the other sex.—Sidney Smith Saunders, Gatestone, Upper Norwood: *November*, 1881.

[The ♀ of this latter species has been taken in several localities by Mr. Bridgman and myself, and this capture of the ♂ is most interesting. I hope to describe both sexes in an early number.—E. S.]

Dufourea vulgaris, Schk., at Woking.—While walking along the banks of the Basingstoke Canal at Woking on the 1st of August last, I observed a number of small black *Apidæ* busy at work on the bloom of the Ragwort: to capture some few of them was the work of a very few minutes, and amongst them was one specimen which, when I picked it off the bloom, did not attempt to fly away but appeared very sluggish and lay in the palm of my hand as though feigning death, or as though benumbed with cold. Not knowing this insect I submitted it to Mr. E. Saunders, to whose kindness I am indebted for its determination; it is a ♀ and somewhat resembles a small *Panurgus calcaratus* in whose company it was taken; it is rare both on the continent and in this country. There is, I believe, only one other recorded capture of *Dufourea* in England, viz., by Sir S. S. Saunders (*vide* Ent. Mo. Mag., xvi, p. 181), in 1879, who took a solitary ♂ specimen by sweeping, near Christchurch, Hants; although I have looked carefully several times since in the same locality I have not been again able to meet with it.—T. R. Billups, 4, Swiss Villas, Coplestone Road, Peckham: *November*, 1881.

Lasiosomus enervis, H.-Sch., near Weybridge.—A solitary specimen of this exceedingly rare Hemipteron was captured by myself at Weybridge, in March last, while shaking out moss over paper in search for the smaller *Brachelytra;* as I think this is the second specimen that is known to have been taken in this country, a record of its capture may not be unworthy a place in your Magazine. I am indebted to my friend Mr. E. Saunders, to whom I submitted the same, for his kindness in identification.—Id.

A few words on the larva of Cerura erminea *as distinguished from that of* C. vinula.—Having lately been asked to determine whether a *Cerura* was *vinula* or *erminea*, I had my attention drawn to the published figures and descriptions of the larva of the last named species, and finding some very contradictory statements as to its essential characters, I confess that for a time I was fairly puzzled.

In writing to Professor Zeller I mentioned my dilemma and called his attention to the figures given by Freyer in his Beiträge (I, 14) and in his Neuere Beiträge (I, 92), and to that given by Duponchel in his Iconographie. In reply the Professor says: "With regard to the larva of *Cerura erminea*, I can assure you that it is correctly represented by Freyer on both his Plates, but the earlier figure is almost better than the later one; the long white streak which runs down the side will distinguish it with certainty from the larva of *C. vinula*. I met with the larva in 1850 at Glogau, on Canadian Poplar, and bred a beautiful female the following March."

If the dark dorsal mark which we find both in the larva of *C. vinula* and in that of *C. erminea* be compared to a *saddle*, then the distinctive character of the latter larva is *the snowy white stirrup-leather* (with no stirrup attached) *which depends from the saddle on the hinder half of the* 8*th segment descending below the level of the spiracle.* If any one succeeds in finding a "Puss" larva with such a character, let him take great care of it, and if it does not produce an ichneumon, he may look in due course to see the imago of *Cerura erminea.*—H. T. STAINTON, Mountsfield, Lewisham, *November* 14*th*, 1881.

Re-occurrence of Trochilium scoliiforme at Llangollen.—Not having seen any recent notice of the capture of *Trochilium scoliiforme* I thought that the record of a specimen taken this year might be interesting. Walking in a birch wood on June 26th, in the middle of the day, my attention was attracted by something running up the trunk of one of the trees, this proved to be a female *T. scoliiforme*, with wings unexpanded. A close examination discovered the empty pupa case protruding from the bark, and close to it another empty case. I diligently searched the trunks in the neighbourhood, and kept a sharp look out on the flowers but without further result. The birch wood close to Valle Crucis Abbey, Llangollen, is the precise locality mentioned by Stainton in his British Moths.—G. H. KENRICK, Maple Bank, Edgbaston: *October* 24*th*, 1881.

Agrotis Ashworthii at Penmaenmawr.—When collecting in North Wales, towards the end of July last, I found, high on a mountain at Penmaenmawr, two batches of eggs of some *Noctua*, but which I did not recognise. The smaller batch, deposited on the bare rock, I left, but the larger batch, deposited on a withered heath-twig, I brought away. These soon hatched, and the larvæ fed well on *Polygonum* and other plants until about five-eighths of an inch long. But early in September, perhaps for want of suitable conditions for hibernation, they began to droop and die off rapidly, and, on the 19th of that month, fearing I should soon have none left, I sent about half-a-dozen to Mr. S. L. Mosley to figure for future reference, as I had been quite unable to make them out. Mr. Mosley, however, at once recognised them from figures or preserved larvæ in his possession, previously received from Mr. Gregson, as *Agrotis Ashworthii*; and, on looking up the descriptions, I found they were undoubtedly of that species. I had never thought of *Ashworthii* in connection with them, or should have recognised them long before. Some hundreds of them must have hatched, but at the time I write not more than one or two are alive, unless, indeed, friends to whom I gave some have been more fortunate. On the same mountain I took a specimen of the fine dipteron *Tabanus*

Occurrence of Œcetis furva, Ramb., in Cumberland.—I took both sexes of the above insect at Elter-water, near Ambleside, in August.—JAMES J. KING, 207, Sauchiehall Street, Glasgow: *November*, 1881.

New locality for Polycentropus Kingi, McLach.—I was fortunate in capturing a few examples of the above caddis-fly on the Brathay river, near Ambleside, in August last. This is the third known locality for this insect.—ID.

Setodes argentipunctella, McLach, occurs in profusion on the Brathay river, at Brathay Church, Ambleside.—ID.

Stenophylax rotundipennis, Brauer, in Scotland.—When looking over some insects taken by Mr. Morton, at Carluke, I found a ♂ and ♀ of the above, which he captured on the Clyde.—ID.

"*La Société Française d'Entomologie*" is the title under which certain members of the "Société Entomologique de France," who think that respectable body has become somewhat effete, seek to establish a new Society; the prospectus and proposed rules bear the signature of Albert Fauvel. The principal aim is the publication of a French monthly Entomological Journal. We consider such a journal a distinct desideratum for France. But in that rich country surely there are to be found entomologists of sufficient enterprise to undertake the risk and trouble of such a publication without the aid of the ponderous machinery of a new Society; moreover, the present agitation throws the promoters open to the suspicion of wishing to create schism in the original Society. We wish to see the proposed journal appear, but not under the auspices of a second French Entomological Society. At the same time, we would hint that our colleagues of the executive of the "Société Entomologique de France" might show a little more energy, and institute some needful reforms, not the least of which should be an endeavour to bring out each annual volume of "Annales" within the year.—EDS.

The "Wiener entomologische Zeitung."—We are glad to learn that the Austrian Entomologists propose to commence with the new year a monthly Entomological Journal (24-pp. 8vo, price 8 marks annually) under the above title. We wish it a longer life than its predecessor, the "Wiener entomologische Monatsschrift." The proposed editors are: Ludwig Ganglbauer (assistant in the Vienna Museum), Dr. Franz Löw, Prof. Josef Mik, Edmund Reitter (all three well-known names), and Fritz Wachtl ("Oberförster" and official entomological referee). It will be published by Alfred Hölder, of 15, Rothenthurm Strasse, Vienna.—EDS.

Obituary.

William Garneys.—The brief record of Mr. Garneys's sudden death (at the early age of 49), contained in our last Number, needs supplementing by a few remarks on his devotion to the study of Entomology, and a reference to a local work of somewhat high standing, of which he edited the 2nd edition. Educated for the medical profession, and the son of a country doctor, there is small wonder that the practical pursuit of an easily accessible branch of natural history should have attracted him as a young man, whose mind was well prepared by anatomical and biological studies: and no better field for observation could have been found than the district around Bungay, on the river Waveney, the boundary line of Suffolk and Norfolk, in which town his early days were spent. The marsh lands and rich pastures here produce insect life in profusion, both of species and individuals; and probably no single locality in England would offer so many attractions to an incipient Entomologist. During his final curriculum in the metropolis, Mr. Garneys made the acquaintance of the chief London Coleopterists ; and when he settled at Repton, on the Trent, in South Derbyshire, he never allowed the anxieties and ceaseless duties of a country doctor in considerable practice to prevent him from seizing every opportunity of extending his knowledge of the local insect fauna. Here he was fortunate in meeting with others of congenial tastes, Burton and its neighbourhood having, by some lucky chance, attracted enough resident Entomologists to form, as it were, a local Society, containing such names as Brown, Hewgill, Garneys, Harris, Mason, and Fowler, all well-known supporters of British Entomology.

Mr. Garneys was unwearying in his efforts to assist his fellow workers; with an accurate eye, well trained by lengthened scientific observation, and possessed of sound books and a good collection, he was never so happy as when working out the difficulties captured by himself or his friends ; and the chief result of this close attention is shown by his "List of Coleoptera of Repton and neighbourhood," contained in the 2nd edition, edited by him, of the "Contributions to the Flora and Fauna of Repton and neighbourhood," published by Bemrose & Sons, 23, Old Bailey, and Irongate, Derby. This little volume was originally compiled for the guidance of the students of Natural History in the well-known Repton School; it contains— Lists of the Plants by Mr. F. O. Bower and Mr. Lewis, twice revised and added to by Mr. Garneys; of Birds by Mr. Worthington; of Mosses and *Mollusca* by Mr. Garneys and Mr. Hagger; of *Lepidoptera*, originally by the Rev. F. Spilsbury, but increased by Mr. Garneys and Mr. Mason; and of the Beetles by Mr. Garneys alone. This latter is very full, with localities, &c., and may be taken as a model for local lists. It is remarkably free from misprints, and we are only able to add a single species to it, viz., *Phyllotreta tetrastigma*, Comolli, which the writer of this notice found in Repton Shrubs when collecting with the late Mr. Garneys.

Mr. Garneys was a supporter of this Magazine from the very first, and occasionally contributed short notes to our columns.

John Bickerton Blackburn, B.A., died at the residence of his father-in-law, the Rev. J. Buckmaster (Vicar of Wandsworth) on the 29th October, at the early age of 36. He was the brother of the Rev. Thomas Blackburn (now of Honolulu, Hawaiian Islands), one of the original editors (we might say the founder) of this Magazine. After the demise of the "Entomologist's Weekly Intelligencer" in 1861, the two brothers and a friend (all youths) started, in August, 1862, the "Weekly Entomologist," and continued it for 15 months, a bold stroke, and one that might have been successful had the experience of the editors been equal to their enthusiasm. Both brothers at that time held official positions at Somerset House; both found the position uncongenial. Our former colleague qualified himself for clerical duties : his brother (now deceased) became engaged in tuition, but his health

NOTES ON THE ENTOMOLOGY OF PORTUGAL.

VI. *HYMENOPTERA ACULEATA*,

COLLECTED BY THE REV. A. E. EATON IN 1880.

BY EDWARD SAUNDERS, F.L.S.

In recording the species of Aculeate *Hymenoptera* captured by the Rev. A. E. Eaton, I am glad to be able to notice many species of considerable rarity and interest, including 4 that I believe are new to science, and which I have described in the following notes. The collection contains altogether 79 species, and of these 28 occur also in Great Britain. Dr. Perez, of Bordeaux, has kindly examined some of the difficult species of *Andrena*, &c., for me, and many of them bear his names, some of which, I believe, are still unpublished, but likely to appear in a forthcoming work.

FOSSORES.

Mutilla stridula, Rossi.—One ♀, May 8th, at Almodovar.

Philanthus triangulum, F.—One ♂, May 23rd, on the hillside near São Marcos de Serra.

Cerceris arenaria, L.—One ♂, May 15th, in a vineyard to the north of Silves.

Hoplisus latifrons, Spin.—One ♀, May 15th, in a vineyard to the north of Silves.

Bembex rostrata, F.—Three ♂, July 7th, Vigo [Spain], off *Eryngium* on the sea shore.

Trypoxylon clavicerum, Lep.—One ♀, May 18th, on the road from Silves to Monchique.

DIPLOPTERA.

Vespa germanica, F.—Two ♀; one on Picota, near Monchique, the other at Cintra.

V. sylvestris, Scop.—Two ☿; one, June 24th, westward of Villa Real, the other, June 14th, hillside near Ponte de Morcellos. Both specimens are more shining than those that occur in England.

Odynerus (Oplopus) Dufourii.—Two ♀, May 7th, near Almodovar.

O. (*Leionotus*) *simplex*, F.—One ♂, May 13th, between São Barnabe and São Bartholomeu do Messines. The yellow colour in this specimen is unusually abundant.

O. —— *sp. ?*—One ♂ allied to *tristis*, Thoms., June 12th, Ponte de Morcellos.

O. (Ancistrocerus) renimacula, Lep.—One ♀, June 14th, hillside near Ponte de Morcellos.

Pterocheilus phaleratus, Pz.—One ♂, June 15th, without locality.

Ceramius lusitanicus, Klug.—One ♀, May 19th, near Monchique.

ANTHOPHILA.

Colletes marginata, Sm. (*nec* Schenck).—One ♂, June 3rd, between Coimbra and São Antonio.

Sphecodes gibbus, L.—One ♀, June 8th, Cea.

S. pilifrons, Thoms.—One ♀, May 15th, vineyard north of Silves.

Halictus scabiosæ, Rossi.—Four ♀, June 3rd, between Coimbra and São Antonio.

H. pyrenæus, Perez.—Two ♀, June 3rd, between Coimbra and São Antonio.

H. cylindricus, F.—One ♂.

H. hæmorrhoidalis, Schk, 1853. }
prasinus, Sm., 1855. } —One ♂, two ♀. ♂ & ♀, June 12th, Ponte de Morcellos; ♀, May 15th, vineyard north of Silves. Prof. Perez has examined the ♂, and returned it with the note, "*H. hæmorrhoidalis*, Schenck, = probablement le ♂ de *prasinus*," and it agrees with the ♂, which we refer to that species in this country. Schenck's name has the precedence.

H. interruptus, Panz.—One ♀, June 24th, westward of Villa Real.

H. bifasciatus, Brullé.—One ♀, slopes of Picota near Monchique, at an altitude of over 1600 feet.

H.——*sp. ?*, "4-signato affinis" Perez.—June 14th, hillside near Ponte de Morcellos.

H. platycestus, Dours.—One ♀, May 15th, vineyard north of Silves.

H. costulatus, Kriech.—One ♀, May 21st, near Monchique, at an elevation of 1650 feet.

Andrena pilipes, Fab.—One ♂, near Monchique, with the preceding.

A. Trimmerana, Kirb., *var. spinigera*, K.—One ♂, April 27th, hill above Cintra, near the Peña. Prof. Perez considers *spinigera* as only a form of *Trimmerana*, and I have little doubt that he is correct, the male of *spinigera* true is very distinct, by the long spine on the ble, except by the colour of the abdomen, which in the other allied species, such as *rosæ*, *decorata*, &c., is known to be very variable and of no specific value.

A. nigroænea, Kirb.—Two ♂; one, June 3rd, between Coimbra and São Antonio; the other, April 27th, above Cintra, near the Peña.

A. granulosa, Perez.—One ♀, May 20th, slopes of Picota, near Monchique, at an elevation of about 1700 feet.

A. fulvago, Kirb.—One ♀, May 13th, between São Barnabe and São Bartholomeu do Messines.

A. distincta, Luc.—One ♀, May 19th, near Monchique.

A. lithurgoides, Perez.—One ♀, April 27th, hill above Cintra, near the Peña. This species, Prof. Perez says, is rare, and he points out that the specimen is disfigured by stylopization, having the villosity of the last segments denser than in the typical form, and more or less rufescent, also that it has some white spots on the clypeus, which do not exist in the type.

A. Pandellei, Perez, ♂ ?.—One ♂, June 3rd, between Coimbra and São Antonio. Prof. Perez says that he only knows the ♀ of *Pandellei*, which has the thorax covered with a scale-like pubescence like *squamea*, Gir., *squamigera*, Schk., &c., and has the first two abdominal segments red; in this ♂ they are black.

A. fulvicrus, Kirb.—One ♂, April 27th, on the hill above Cintra: one ♀, June 3rd, between Coimbra and São Antonio.

A. lucens, Imh.—One ♂, April 27th, hill above Cintra, near the Peña.

A. obsoleta, Perez.—One ♀, May 7th, Almodovar.

A. puncticollis, Perez.—One ♀, May 18th, on the road from Silves to Monchique.

A. Afzeliella, Kirb., *var.*—One ♀, June 3rd, between Coimbra and São Antonio.

A. erythronota, Perez.—One ♀, Juue 12th, Ponte de Morcellos.

Dasypoda cingulata, Erichs. (Waltl, Reise).—Four ♂, June 3rd, between Coimbra and São Antonio. These ♂ agree well with Erichson's description, except that the 2—5 abdominal segments are clothed with black hairs at the base, which are not mentioned by him, but they are in very good condition, and if Erichson described from a ♂ that had been more exposed to the sun, &c., the difference might easily be accounted for.

Dasypoda Eatoni, n. sp.

Nigra, sub-nitida, capite (vertice excepto nigro), thorace, abdominisque segmentis duobus basalibus, pilis erectis læte fulvis dense vestitis, reliquis nigro pilosis, tertio apice fulvo; segmentorum ventralium apicibus dense nigro-fimbriatis; pedibus supra fulvo, subtus nigro pilosis; tarsis calcaribusque testaceis; metatarsis infuscatis. Antennis omnino nigris.

Caput vertice subnudo, irregulariter punctato; mesothorax nitidus crebre sed minute punctatus, metathorax punctatus areâ basali triangulari rugulosâ; alæ subfuscæ, venis fusco-nigris; abdomen nitidum, rugose punctatum, segmento septimo anguste rotundato, sexto ventrali apice rotundato in medio anguste emarginato, postice pilis brevibus erectis densissime vestito; tibiis metatarsisque longe pilosis.

Long. 13 *mm.*

One ♂, June 24th, westward of Villa Real, at an elevation of 1780 feet. I can find no description that will at all agree with the characters of this ♂, which is in very bright and fresh condition.

Panurgus proximus, n. sp.

♂. P. Banksiano, K. (atro, Pz.), *simillimus, sed genitalium formâ coloreque obscuro mox distinctus (vide fig.).* P. arctos, Erich., *affinis, sed fimbriæ anali colore discedens,* ♀ *quam ad hanc speciem refero.* P. Banksiano *formâ approximat sed fimbriâ anali læte aureâ, abdominisque segmento sexto dorso subplano, distinguitur.*

Long. 10—12 *mm.*

Fig. A. Genitalia of *P. proximus.*

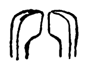
„ B. Apex of sagittæ of genitalia of *P. Banksianus.*

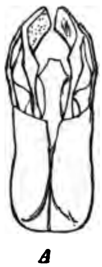
♂ ♀, May 12th, between Almodovar and São Barnabe; ♀, May 15th, vineyard N. of Silves.

I have not described this species in full, as it is so like *P. Banksianus* that I thought it would be enough to indicate its characteristic peculiarities. In the ♂ the genitalia are dark brown, not pale testaceous as in *P. Banksianus* (in this respect agreeing with *P. arctos*, Er.); the sagittæ are produced laterally into a membranous wing, wholly wanting in *P. Banksianus*, and the apex of each is not rounded as in that species. The ♀ is distinct not only by the bright colour of the anal fringe, but also by the nearly simple apical segment, which in *P. Banksianus* has its centre triangularly raised.

I have had very great doubts as to the distinctness of this ♂ from, *P. arctos*, but Erichson mentions both *ater* and *arctos*, and distinguishes *arctos* from *ater* by the darker colour of its genitalia and its *black* anal fringe. Now, in my specimen the anal fringe is if anything lighter than in *ater*, and I, therefore, thought that I should not be justified in adopting his name. I have no actual proof that the ♀ described belongs to this ♂, but they were taken in the same locality and on the same day.

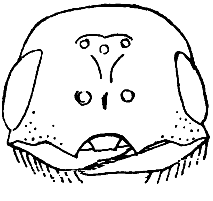
B



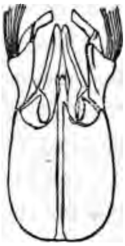


A

P. Perezi, n. sp.



Head of *P. Perezi.*



Genitalia, *P. Perezi*

Niger, nitidus, nigro pilosus, capite maximo, thoracis multo latiore, facie (*vide* fig.) *transversâ pilosâ, clypeo pilosissimo, antice valde et semi-circulariter exciso, labro polito, mandibulis falcatis, genis pilosis, vertice polito, subquadrato, postice emarginato sparsim punctato et piloso; thorace supra breviter, sub alis longe, pilosa; mesothorace supra nitido, sparsim punctato, linea dorsali antice impresso, alis dilute infuscatis; metathorace basi longitudinaliter rugoso; abdomine subovali sparsim nigro piloso, segmentorum apicibus sub-depressis, discoloratis, fimbria anali nigra, subtus, præsertim lateribus, nigro piloso; genitalibus pallide testaceis, nitidis, stipitibus medio externe longe nigro fasciculatis* (*vide* fig.), *pedibus simplicibus rufo-pilosis, tarsorum apicibus testaceis, metatarsis anterioribus subtus longe pilosis. Long.* 10 *mm.*

P. cephaloti *affinis, coxis simplicibus, tibiisque intus non fasciculatis distinctus.*

Three ♂, May 15th, in vineyard north of Silves.

This species appears to me quite distinct from anything described. I sent a specimen to Prof. Perez, who told me it was unknown to him.

Panurginus montanus, Gir.—One ♀, May 15th; this rare little species was taken in a vineyard north of Silves.

Camptopœum frontale, Fab.—One ♂, June 9th, São Romão, at an elevation of over 1790 feet; this is also a rare species in collections.

Osmia rufa, L.—One ♀, hillside near São Marcos de Serra.

O. cœrulescens, Latr. and Giraud (*nec* Kirby).—One ♂, one ♀. Giraud, in his paper on the *Hymenoptera* which infest the brier-stems (Ann. Soc. Ent. Fr., 4, ser. vi) has carefully distinguished two very distinct species, which are mixed in many collections under the name of either *œnea* or *cœrulescens*, but he refers to *cœrulescens*, Kirby, the species whose ♂ has the apex of the abdomen 3-dentate and the ♀ the thorax black; certainly, Kirby in his description says *corpore femineo atro*, but we have only found one species in England, and that certainly is the one with the 2-dentate ♂ and the blue-black ♀. I say this after a careful examination of Kirby's types.

O. fulviventris, Latr.—One ♀, June 3rd, between Coimbra and São Antonio.

O. adunca, Panz.—One ♂, May 18th, road from Silves to Monchique.

Megachile maritima, Kirb. — One ♂, July 7th, Vigo [Spain], amongst *Eryngium* on the shore.

M. melanura, Duf.—One ♀, May 7th, Almodovar.

Heriades campanularum, Kirb.—One ♂, June 3rd, between Coimbra and São Antonio.

Ceratina albilabris, Jur.—Four ♂, four ♀, May 21st, near Monchique, at an elevation of 2050 feet; 21st June, up the high hill N.W. of Villa Real.

Nomada succincta, Panz.—Three ♀; two taken, May 13th, between Barnabe and São Bartholomeu do Messines, and one, June 12th, at Ponte de Morcellos. The two taken on May 13th are very large and fine, and I was almost tempted to describe them as a new species, but as I can find no satisfactory structural characters, I think it wiser to wait for further evidence of their distinctness.

N. —— *sp.?* not yet determined.—One ♂, May 20th, slopes of Picota, near Monchique, at an elevation of 2250 feet.

N. —— *sp.?*—One ♀, = ? ♀ of preceding, June 12th, Ponte de Morcellos.

N. —— *sp.?*—One ♂, May 20th, slopes of Picota, near Monchique, at an elevation of 2250 feet.

Dioxys pyrenaica, Lep.—One ♂, May 7th, Almodovar.

Crocisa orbata, Lep.—Two ♂, June 14th, hillside near Ponte de Morcellos.

Melecta punctata, Latr.—One ♀, hillside near Ponte de Morcellos.

Eucera subrufa, Lep.—One ♂, June 3rd, between Coimbra and São Antonio.

E. similis, Lep.—One ♀, June 19th, near Monchique.

E. nigrofacies, Lep.—One ♂, June 3rd, between Coimbra and São Antonio.

E. semistrigosa, Dours.—One ♀, June 3rd, between Coimbra and São Antonio.

E. collaris, Dours.—One ♀, April 25th, quarries and hillsides near Belem.

E. hispanica, Lep.—One ♀, June 12th, Ponte de Morcellos.

Saropoda bimaculata, Panz.—Two ♂, June 9th, near São Romao, and, June 24th, westward of Villa Real, both at an altitude of 1780 feet or more.

Anthophora personata, Illig.—Two ♂, April 24th, near Olivaes.

A. pennata, Lep.—Two ♂, one ♀ ; ♂ & ♀, April 28th, on the road to Mafra ; ♂ much faded, May 19th, near Monchique.

A. femorata, Latr.—One ♂, June 24th, west of Villa Real, at an elevation of 1780 feet.

A. Thomsoni, n. sp.

Nigra, capite toto nigro cinereo, hirsuto, clypeo rugoso-punctato ; thorace crebrerrime punctato, cinereo hirsuto, dorso summo lævi, inter alas nigro fasciato ; alis dilute infuscatis ; scutello linea dorsali elevata ; abdomine crebre punctato, segmento primo longe cinereo hirto, 2^{do} 3^{tio} *que apicibus albo-fimbriatis,* 5^{to} *dense nigro piloso ;* 6^{to} *valvula dorsali angusta, sub-convexa ; subtus nitida, punctata, segmentorum apicibus membranaceis, nigro fimbriatis, segmento* 4^{to} *lateribus albo fasciculatis,* 5^{to} *apice dense nigro piloso,* 6^{to} *setis rigidis fuscis terminato ; pedibus nigro hirsutis, tibiis tarsisque antice griseis ; sarothro albo, metatarsis posticis dense nigro pilosis.*

Long. 14 *mm.*

One ♀, June 9th, near São Romão, at an elevation of 1792 feet. Somewhat like *atroalba*, but differing at once in the colour of the metatarsi, and the narrow white apical bands on the 2nd and 3rd abdominal segments. I have named this species in honour of Dr. C. G. Thomson, of Lund.

Xylocopa violacea, Scop.—One ♂, May 20th, slopes of Picota, near Monchique.

Bombus hortorum, Linn.—Two ♂, one ☿, near Belem, N.W. of Villa Real, and between Coimbra and São Antonio.

B. terrestris, Linn., *var.*—One ♀, May 20th, slopes of Picota, near Monchique. The hairs on the legs are bright fulvous, agreeing with the variety mentioned by F. Smith in Brit. Mus. Catalogue, *Apidæ*, part ii, p. 391.

B. muscorum, Linn.—One ♂, two ☿, June 3rd, between Coimbra and São Antonio ; June 6th, Cea.

Apis mellifica, Linn.—April 27th, quarries and hillside near Belem.

Holmesdale, Upper Tooting :
***November*, 1881.**

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ.*

BY R. H. MEADE.

(*continued from page* 126.)

8. DRYMEIA, Meig.

Gen. ch.—Eyes bare, sub-contiguous in males; antennæ short, with sub-plumose arista; peristome and cheeks bristly; proboscis elongate, horny, and with a moveable, pointed, hook-like apex; abdomen oblong and hairy; alulets moderately developed, with unequal scales; wings with anal vein not prolonged to the margin; legs spinous.

D. HAMATA, Fall.
obscura, Meig. and Macq.

Of this peculiar genus with its elongated hooked proboscis, only one European species is known. I am not aware whether any exotic species have been described, but in a collection of North American *Anthomyiidæ*, which I received in 1876 from the Museum of Natural History, in Cambridge, Mass., for inspection, through the kindness of Baron R. Osten-Sacken, I found several specimens of a species closely related to *D. hamata*, but rather smaller.

9. POGONOMYIA, Rond.

Gen. ch.—Eyes bare, sub-contiguous in males; antennæ short, second joint armed with long bristles; arista sub-pubescent; peristome thickly bearded with bristles; proboscis of ordinary form; abdomen oblong, and hairy in the males, especially at the apex; alulets of moderate size, with unequal scales; wings with anal vein not reaching the margin; legs bristly.

P. ALPICOLA, Rond.

Rondani formed this genus for a single alpine species, which bears a strong general resemblance to *Drymeia hamata*, but differs essentially from that fly by the absence of the hooked proboscis. *P. alpicola* is shining black, about 3 lines in length, with fuscous wings, black poisers, hairy body and legs. Rondani only knew the male; the female differs from it in having the eyes separated by a frontal space, occupying nearly a third of the width of the head; this space is of a deep velvety black colour, bordered on each side by a narrow whitish margin, in which is seated a single row of strong bristles, extending to the base of the antennæ. The ocelli are seated on an oval spot, the front part of which glistens with silvery-white reflections; there is also a well-marked, triangular, silvery-white spot between and over the bases of the antennæ (this spot also exists in the male, though of a smaller size). The peristome is nearly smooth, and the body and legs less hairy than in the male. The abdomen is conical and pointed at the apex. The colour is shining black, with cine-

Like *Drymeia hamata*, *P. alpicola* is sluggish in its habits; it has not previously been recorded as British, nor mentioned I believe by any continental author except Rondani. At the end of June and in the beginning of July last (1881), I found both males and females in profusion in a field of mowing grass, on very high ground, at Queensbury, between Bradford and Halifax. The flies were all located in the corollæ of buttercups (*Ranunculus acris*), and allowed themselves to be captured by the hand. I have not met with them in, nor received them from, any other locality.

10. OPHYRA, Desv.

Gen. ch.—Eyes bare, large, contiguous or sub-contiguous in males; arista bare; abdomen oval, furnished with soft hairs, but without bristles; alulets large, lower scale much longer than upper; anal vein of wings not reaching the margin; posterior tibiæ mostly curved and ciliated; colour metallic steel-blue or black.

1. LEUCOSTOMA, Fall. 2. ANTHRAX, Meig.

The flies comprised in this small genus are characterized by their shining metallic colour. In their habit they resemble some of the true *Muscidæ*, as the *Luciliæ*, &c. The first species is generally distributed; but the second (*O. anthrax*) is local, though occuring in great abundance in some places. The only locality in which I have seen it was at Buckingham, where it was swarming on a hedge near a bone mill, which emitted a strong putrid smell.

11. TRICHOPHTHICUS, Rond.

Lasiops, Meig. p.

Gen. ch.—Eyes hairy, and contiguous or sub-contiguous in males; arista sub-pubscent or bare; epistome sometimes prominent; alulets moderately developed, with unequal scales; anal vein not prolonged to the margin of wing.

1. CUNCTANS, Meig. ♂.
   innocens?, Zett. ♂.
   decolor, Fall. ♀.
2. SEMIPELLUCIDUS, Zett.
3. PULCHER, *sp. n.*
4. ROSTRATUS, *sp. n.*

Meigen formed the genus *Lasiops* to include all those species of *Anthomyiidæ* which have hairy eyes and a pubescent arista. His definition was so short and incomplete, that he grouped together several species belonging to quite distinct genera; and the genus *Lasiops*, as described in the 7th vol. of his great work, really includes only two characteristic species, for out of the five which he enumerates, one (*L. occulta*) is a *Hydrotæa*, another (*L. apicalis*) appears to be identical with *Hyetodesia semicinerea*, Wdm., and a third (*L. ænescens*) belongs to the genus *Lonchæa* among the *Acalypterata*.

Besides *L. cunctans*, Meig., and *L. hirticeps*, Fall. (the two species left in Meigen's genus), there are several species which have been since discovered, with hairy eyes and bare aristæ, which cannot be placed in any of the other described genera; some of these are more highly developed than the others, having largish alulets with unequal sized scales, while some are of feeble organization, with small and equal sized scales. Rondani has placed the former group in his genus *Trichophthicus*, and reserved the name of *Lasiops* for the latter. This arrangement ought to be reversed, as Meigen's typical species (*T. cunctans*) should be retained in his own genus; but my friend, Herr Kowarz, having lately published* an elaborate monograph on the species in the latter division, in which he has followed Rondani, I feel bound to do the same. I shall return to the restricted genus *Lasiops* when I have finished with the more highly organized genera.

T. CUNCTANS, Meig.

This species, which is not uncommon in the North of England, appears to be very rare on the continent. Meigen imperfectly describes the male only, and mentions no habitat. Schiner gives a brief but correct description, stating that he had only seen a single male; and Macquart and Rondani do not allude to it. As I have found both males and females in the neighbourhood of Bradford, I will shortly mention the chief peculiarities of each; for though it is a very well-marked species, it is very imperfectly known.

The males have the eyes contiguous, and clothed with long hairs; the thorax is shining black, but in a strong light may be seen to be striped with four indistinct deeper black lines, the outer of which are broken at the transverse suture. The abdomen is clothed with soft hairs, and appears of a blackish colour when viewed from before backwards, but when looked at from the opposite direction, shines with whitish-grey reflections, and shows a widish, tapering, black dorsal stripe, with indistinct black posterior borders to each segment. The scales are yellowish, and the poisers black. The wings are slightly fuscous; the third and fourth longitudinal veins are parallel between the external transverse vein and the apex, the external transverse vein itself being obliquely placed, but straight. The legs are all black and clothed with soft hairs, but few spines; the posterior tibiæ are ciliated with fine bristles, of moderate and even lengths, along the whole of their external surfaces.

The female has the eyes widely separated, and only slightly pubescent. The thorax and abdomen are both of a dull grey colour, the former is distinctly striped with four black lines, the two central ones extend from the anterior edge to the centre of the back, a little over the suture; the lateral ones are interrupted at the transverse suture, the portions in front of which assume the shape of an oval black spot, while the hinder portions are prolonged in straight lines to the hinder part of the thorax. The abdomen is of a flattened oval shape, pointed at the apex, and of white; the wings clear, and the legs as in the male, but less hairy. There is no doubt but that the *Musca decolor* of Fallén, also described by Meigen and Zetterstedt by that name, all of whom only knew the female, is the opposite sex of *T. cunctans*, though neither of the first two authors were aware of it. Zetterstedt* suspected that his *A. innocens* might be the same as Meigen's *cunctans*, and adds that perhaps it is the male of *A. decolor*. The description of his *A. innocens*, however, does not apply to *T. cunctans* in some points.

T. SEMIPELLUCIDA, Zett.

This very well marked species has been confounded with Meigen's *Lasiops apicalis*, which there is no doubt is the same as *Hyetodesia semicinerea*, Wdm. *T. semipellucida* also bears a very strong general resemblance to that species, and they are often mixed up in collections; but they may easily be distinguished by the following characters: in *H. semicinerea* the arista is decidedly sub-plumose both in male and female, while in *T. semipellucida* it is almost bare in both sexes; in *H. semicinerea* the thorax of the male is more glabrous, and there is a patch of white reflections on each shoulder, which is absent in the other species; the wings of the males are only slightly darkened along the anterior margins in *H. semicinerea*, while they are quite fuscous in *T. semipellucida*; the abdomen is of a pale transparent yellow colour in *H. semicinerea*, with the apical segment black, together with a black dorsal central stripe, and black posterior margins to the segments, while in *T. semipellucida* the abdomen is of a dull brownish-yellow colour, darker towards the hinder part, with transverse black stripes, but without the central dorsal stripe or the black apex; the legs of the males are decidedly longer in *H. semicinerea* than in *T. semipellucida*, and the posterior tibiæ are ciliated on both sides with long hairs in the former, but are almost bare in the latter.

This little fly is generally distributed, but not very common.

T. PULCHER, *sp. n.*

Mas, niger, nitidus; oculis tenuiter hirtis; abdomine oblongo-ovato, cinereo, albo-micante, sub-striato; alis subfuscis; halteribus flavidis; pedibus simplicibus.

Femina, obscure cinerea; oculis sub-nudis; thorace abdomineque concoloribus innotatis; alis hyalinis. *Long.* 1¼ *and* 2 *lin.*

♂. *Head:* eyes sub-contiguous, with short hairs; forehead and face not prominent, epistome slightly projecting; antennæ a little prolonged, the third joint about twice as long as the second; arista long, thickened, and slightly pubescent at the base, the remainder slender and bare.

Thorax with *Scutellum* shining brownish-black, and unstriped.

Abdomen hairy, oblong-oval or conical, of a brownish-grey colour when viewed from before backwards, but when seen in the opposite direction, appearing of a glistening whitish- or bluish-grey colour (glaucous), marked with faint brown dorsal reflections, assuming the form of a dorsal stripe, dilating into indistinct triangular spots or patches; sub-anal organs small.

Wings more or less tinged with brown; third and fourth longitudinal veins slightly diverging at their extremities; external transverse vein straight and upright.

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* Dipt. Scand., vol. iv, p. 1523.

Calyptra yellowish-white, rather small, but with unequal scales. *Halteres* yellow.

Legs black, with few hairs or bristles; posterior femora rather long, almost bare along their anterior two-thirds, but furnished with a loose tuft of a few long hairs on both sides of their hinder extremities; posterior tibiæ bare, with the exception of two or three shortish bristles on their outer sides.

♀ rather smaller than ♂. *Head:* eyes nearly bare, separated by a wide black space, occupying nearly a third of the width of the head. *Thorax* and *Abdomen* of a brownish-grey colour, without markings. *Wings* clear. Other characters similar to those of the male.

This small species is generally distributed, especially in the North of England; it bears a good deal of resemblance in size, shape and colour to *Mydæa vespertina.*

T. ROSTRATUS, *sp. n.*

Mas, nigrescens; ore valde producto; abdomine glauco-cinereo, linea dorsali et faciis transversis nigris signato; tibiis posticis incurvis, apicibusque calcare acuto armatis; halteribus nigris. *Long.* 3 *lin.*

Head: eyes long-haired, and contiguous; forehead prominent; face white, with black reflections; antennæ black and short, the third joint rather longer than the second; arista sub-pubescent; lower surface of head flat, with the anterior part projecting forward below and beyond the antennæ in the form of a snout; opening of the mouth large; proboscis thick and rather elongated; palpi filiform and black.

Thorax black, clothed with thin grey tomentum, and without distinct stripes; shoulders greyish-white; scutellum black.

Abdomen hairy, conical, and rather elongated; the four segments nearly equal in length, the first black, the other three of a glaucous or greyish-white colour, with black reflections, which show differently in different aspects; when viewed from before or the side, they assume the form of six semi-lunar spots, one placed on each side of the base of each segment; but when seen from behind, there appears to be an interrupted central dorsal stripe, dilated at the posterior edge of each segment into a triangular spot, the lower angles of the base of which are continued into a transverse, widish black band, which encircles the posterior margin of each of the three last segments; anal segment thickened, but without projecting appendages.

Calyptra well developed, white. *Halteres* black.

Wings clear, third and fourth longitudinal veins divergent; internal and external transverse veins near together, the latter straight.

Legs black, with posterior femora ciliated along their whole under-surfaces with hairs of moderate and even lengths; posterior tibiæ curved inwards, shortly ciliated along their outer sides, and armed with a strong sharp pointed spur a little before their apex on their inner sides, which are otherwise nearly smooth.

The female is unknown to me.

I have seen but one specimen of this well-marked and peculiar species, which was in an imperfect condition, having lost the antorior tibiæ and tarsi, and the middle legs entirely; it was in a collection of unnamed British *Diptera* made by the late Mr. Francis Walker, the locality being unmarked. It is closely related to the *A.*

NOTES ON BRITISH *PTEROPHORIDÆ*.

BY C. G. BARRETT.

For a long time it has seemed to me that the present synonymy of the *Pterophoridæ* is not well understood, nor, fully cleared up. The corrections introduced by Dr. Jordan in his notice of Pastor Wallengren's work (Ent. Mo. Mag., vol. vi, pp. 117 and 149), and by Mr. Stainton (Ent. Mo. Mag., vol. ii, p. 187), have been partially adopted, and the names introduced in an extremely haphazard manner into published lists and private collections; and, as I have a few words to say on some of the species recently noticed by my friends Dr. Jordan and Mr. Sang, in these pages, the opportunity seems favourable for suggestions about the nomenclature of others.

Platyptila Bertrami, Rössl. (= *ochrodactyla*, Hüb., *dichrodactyla*, Mühlig.).—It ought not to be necessary to point out that these are not three species, but that the name *ochrodactyla* was found to belong properly to the species which feeds on tansy (*Tanacetum vulgare*), and not to our much commoner species on *Achillea*, which, therefore, received another name—*Bertrami*, Rössl. The third name—*dichrodactyla*, Mühlig,—being a synonym of *ochrodactyla*, need not be used. In this we shall be in agreement with continental authorities.

In contrast to the habit of the larva of *ochrodactyla*, as detailed by Mr. Sang, I may mention that the larva of *Bertrami*, which feeds (exclusively, I think) on *Achillea millefolium* and *ptarmica*, attacks the top of a young shoot, eating out the heart and feeding *downwards* for a short distance into the tender young stem, then leaves it to attack another young shoot in the same manner. This larva is, in fact, rather an external, than an internal, feeder. The habits of the larvæ seem certainly to point to the distinctness of these two species.

For *Platyptila trigonodactyla*, Haw., the prior name, *gonodactyla*, Schiff, is, I think, now generally adopted, but the correction of *cosmodactyla*, Hüb., for *Amblyptilia punctidactyla*, Haw., seems usually to be ignored.

Oxyptilus parvidactylus, Haw., is mentioned by Dr. Jordan in the paper above referred to (Ent. Mo. Mag., vol. vi, p. 122) as *Oxyptilus obscurus*, Z., the name adopted by Wallengren, but Haworth's name has priority, and should be retained.

Oxyptilus hieracii, Z.—I feel no doubt that this species is truly British, although very rarely obtained. I have two specimens of the nativity of which I have no doubt, though I cannot ascertain the locality in which they were captured. They were sent to me by a friend who does not collect the group, and could not recollect whence they came. There were authentic specimens in the collection of the late Mr. T. H. Allis, and I hope they still exist at York.

Oxyptilus lætus, Z., *distans*, Z.—To a great extent I agree with Dr. Jordan's remarks on these, but there is a little more to be said. *Distans* is larger, darker in colour, and coarser-looking than *lætus*, but I cannot find any reliable distinctions in *markings* between them—that is between *typical distans* and *lætus* received from Prof. Zeller. The original British specimens from near Thetford, to which the name *lætus* was applied, were *second-brood* specimens, taken late in July, 1868, and these were lighter and brighter-coloured than those of the first brood, which was not met with either that or the following year. I remember very well the day—June 4th, 1870—when the first specimens of the *first* brood were taken, when about thirty fell to two nets at Brandon. They were hiding among the lucern and other low plants, and were easily disturbed, but not always easily caught. Of these, the majority were larger and decidedly darker in colour than those of the second brood, and agreed accurately with types of *distans*; and whenever, in subsequent years, I collected at Brandon in June, I found these typical *distans* mixed with specimens inclining towards the brighter-coloured form, of which the second brood was mostly composed. There can, therefore, be no doubt whatever, that Dr. Jordan is correct in applying the name *distans* to our insect, and, I think, very little doubt that *lætus* is a variety of the same species. I admit a *little* doubt on the point, seeing that a very few specimens have been taken at Folkestone by Mr. Purdey and others of an *Oxyptilus* which agrees absolutely with continental *lætus*, but is rather paler than any Brandon specimen that I have seen, and, as far as I know, the *distans* form has not been taken at Folkestone. Probably, this only requires careful looking after, but it would, doubtless, be rare in that neighbourhood. I think I am at liberty to say that Prof. Zeller is also now of opinion that *distans* and *lætus* form but one species.

Mimœseoptilus bipunctidactylus, Haw.—This name seems to have been entirely overlooked by Dr. Wocke and Pastor Wallengren, both of whom have adopted *serotinus*, Z., which certainly is a much later name, but has, nevertheless, found its way into many lists and cabinets. I am strongly of opinion that Haworth's name should be restored.

gating it from time to time for a dozen years, and am not fully satisfied yet. The distinctive characters, as given by Mr. Stainton, are: the dark clouding on the costa, and the short black streak on the anterior lobe of the fore-wing.

This insect is common in chalky places among *Scabiosa columbaria* —sometimes swarming about disused chalk-pits,—from nine to ten lines in expanse of wings, usually with the markings more or less distinct, and sometimes very pronounced, but also frequently varying in the direction of faintness of these typical markings until in some specimens they entirely disappear. On the other hand, we find scattered all over the country, almost wherever *Scabiosa succisa* grows, the ordinary *M. bipunctidactylus*, varying from eight to ten lines, the smallest specimens generally occurring in the drier localities, where the scabious is stunted. These are usually without the clouded costa and black streak on the anterior lobe, but in some specimens both characters appear indistinctly, and, in some few, they are to be seen pretty distinctly; in fact, the two forms distinctly overlap. I remember that at Ranworth Fen a patch of very luxuriant *Scabiosa succisa* produced specimens that leaned altogether to the *plagiodactylus* form; while at Brandon, among *Scabiosa columbaria* and *arvensis*, the two forms were so mingled, that no one could separate them. Now, in all these forms the black spot before the fissure is constantly present, it does not seem in the least degree to share in the inconstancy of the other dark markings, and the white border of the fissure is also usually visible.

From the lake district comes a form in which these reliable characters are much as usual, but the variable characters—the clouding and black streak—are so much exaggerated that the insect has been described as a distinct species. It has, however, been reared from precisely similar larvæ to those of *plagiodactylus*, feeding in a precisely similar way. I have many times spent hours—with good magnifiers —over long series of these various forms, and have not been able to find any reliable point of distinction between them, and the only logical conclusion I can come to is, that they constitute but one species —*bipunctidactylus*, of Haworth. As already stated, I believe the few British specimens that have been reared under the name of *aridus*, Z., to be pale ochreous varieties of this species. I will not venture an opinion upon Zeller's *aridus*, of which I have but a single type, and which is recorded from Southern Europe, Northern and Western Russia, Armenia, and Palestine.

The larva of *M. plagiodactylus*, with its mode of feeding in the shoots of *Scabiosa columbaria*, is described in this Magazine, vol. viii, p. 156, and there is a strong impression on my mind that I have seen in print or manuscript a precisely similar description of the economy of *M. bipunctidactylus* in *Scabiosa succisa*, but I cannot now put my hand upon it. But Dr. Rössler, of Wiesbaden, describes the larva of the *autumn* brood as follows:—

> "In September, 1863, I found some flowers of *Scabiosa succisa* inhabited by larvæ, which only betrayed their residence there by small threads on the blue petals. Brought indoors there appeared in a few days a spindle-shaped larva, verdigris-green, the broad dull red dorsal line margined on both sides with whitish-green as far as the usual position of the sub-dorsal line. Head, anterior legs, and spiracles brown-black, the anterior segments with some brown dots, the body clothed with isolated whitish hairs. For pupation it attached itself like a butterfly larva, the pupa hung downwards by the tail and was, like the larva, green with a red dorsal stripe. The imago appeared in ten days. The imago flies here among *Scabious* in dry sunny places and is not scarce in June and September."

The larva of the June brood could not have fed in the flowers.

Mimœseoptilus Loewii, Z., seems to be correctly changed to *zophodactylus*, Dup. I am quite of Dr. Jordan's opinion that *Hodgkinsoni* is merely a slight variation of this species.

Much confusion seems to have resulted from the fact that our old and well-known *M. fuscus*, Retz., *fuscodactylus*, Haw. (feeding on buds of *Veronica chamœdrys*), is really *pterodactylus*, L., and that the species which stood in our lists and books as *pterodactylus* (the *Convolvulus* feeder) is *monodactylus*, L. This last name is wonderfully suitable to this species, which, when at rest, is a conspicuous object, with its fore and hind wings rolled up into "one finger," pointing each way like a sign post.

Pembroke: 14*th November*, 1881.

NATURAL HISTORY OF *EMMELESIA BLANDIATA*.

BY WILLIAM BUCKLER.

The habits of the genus *Emmelesia* seem to make it such a difficult matter to get hold of the larvæ of some of the species, that I feel more than ordinary pleasure in being able to say that I have removed *blandiata* from my list of desiderata: of course it was not one of the "unknowns," for the food-plant, and a description after Freyer, had been given in Stainton's Manual, yet for all that I could see no chance of obtaining the larva for years: and now—it has not been by means

On 21st of August, 1880, a sultry day with hot sun and occasional showers, the Rev. J. Hellins was strolling in advance of his vehicle through a part of the Brunig pass, between Alpnach and Brienz in Switzerland, and was watching the swarms of butterflies on the wing, when he noticed a small grey moth busy over a plant of Euphrasy (*Euphrasia officinalis*), which was growing on a bank a little above his head; some misty recollection of the above-mentioned notice in the Manual made him think of *blandiata*, and he tried to catch the moth in order to see if it was that species, but failing in this, he came back to the plant about which it had been flying, and pulling several shoots of it found that he had secured about a dozen of the eggs that had just been deposited underneath the leaves amongst the open flowers, and these, unfortunately supplemented by some fresh shoots gathered early next morning, and so damp with dew, he posted in a tin box to me on the 22nd, and I received it in the afternoon of the 23rd.

On opening the box I found most of the Euphrasy already decayed, for it is one of the plants that fade rapidly from damp, and though I could see several empty egg shells, there were only four or five tiny larvæ still living, but there was also one bigger and finer than the rest, just emerging from a round hole in a seed vessel, where it had evidently fed on the unripe contents; a few eggs had remained unhatched, and from these one larva appeared next day, and two more the day following, when I also found another larva of an earlier batch that had already moulted once if not twice.

The young larvæ soon ate their way into the seed capsules and therein must have moulted, for though their small entrance hole was detected in the upper part of some capsules, they themselves could be seen but seldom for some time until they had acquired a certain amount of growth, and until the necessity for more food compelled them occasionally to come outside and attack fresh capsules, when they could be better observed; especially was this the case after their last moult, when (like the larva of *E. unifasciata*, Ent. Mo. Mag., vi, p. 186) they assumed a handsome dress admirably designed in harmony of aspect with the food-plant for their protection, whilst living for the remainder of their larval existence more or less exposed; for often they remained with their heads buried in the seed capsules and the greater portion of their bodies resting outside, and motionless for hours during the daylight; but the succession of brilliant little flowers given forth by the plants seemed quite to divert the eye from the larvæ, and, moreover, their assimilation to the stems and leaves was so perfect, that even when one knew they were present on a shoot, it was with difficulty they could be detected.

The two most advanced in growth moulted the last time in the evening of the 1st of September, the others at intervals later, and the first entered the earth on the 10th, more followed soon, and the last on the 18th.

The only moth bred as yet, a male, appeared on 14th of August, 1881, and enabled me to make sure of the species, though probably more will emerge in a future season in conformity with the habit of some of its congeners.

Again, during this last August, Dr. T. A. Chapman, most kindly sent me from Switzerland, amongst other things, a good supply of Euphrasy shoots (gathered near Engelberg, some 12 or 15 miles, as the crow flies, from the spot where Mr. Hellins had seen his moth the year before), on which he had detected eggs, and from these Mr. Hellins has succeeded in rearing to full growth about a dozen larvæ evidently of the same species, and has thus enabled me to supplement my description drawn from the examples I had reared myself: these were about a week later in their changes than the larvæ of 1880.

The egg of *blandiata* is oblong and somewhat flattened, one end more rounded than the other; rather more than $\frac{1}{80}$ inch long and about $\frac{1}{100}$ inch wide, the shell reticulated rather coarsely and shallowly, not very shining, and of a deep yellow colour; when empty the shell looks white.

The newly-hatched larva is rich yellow, with blackish-brown head and narrow plate across the middle of the second segment, its skin glossy, the bristles from the usual spots are somewhat clubbed; in four days' time it is decidedly grown, still yellow,* and with the addition of a dark purplish-brown dorsal line, and a sub-dorsal line rather paler than the yellow ground and faintly edged with darker; after a moult and increase of size the colouring is more opaque and of a light buff-yellow, afterwards a very faint brownish colour tinges the back and a slight pearly greyish-whiteness the belly; as they grow they become pale dull green, with a dull purplish dorsal line; but they continue to be very plain little larvæ, until the last moult, which is passed when the length of three-eighths of an inch is attained; at full growth the length is half an inch or a trifle more, and the larva is not quite so thick in proportion as its congener *unifasciata*, though the segments are plump and well defined, each having two transverse wrinkles near the end; the form tapers gradually forward from the

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seventh to the head, which is the smallest, and backward a little from the tenth to the end of the thirteenth. The general ground colour is green varying in richness in different individuals, and is yellower and brighter for the first few days; the head is very glossy, greenish-yellow faintly tinged with pinkish, and having two rows of pink freckles down the front of each lobe, the ocelli large and black; the green of the body is well contrasted with the design on the back which occupies the space there between the trapezoidal warts, and is attenuated a little on the posterior and thoracic segments, beginning on the second as merely twin lines, but on all the others consisting of three equally stoutish lines of very dark crimson, of these the dorsal line in the centre is straight, but each outer one in its course along each segment bends inward a little towards the middle in symmetrical progression, enclosing a ground of deep rose-pink within them at either end, but which is lost in the middle of the segment by the complete fusion there of the three dark crimson lines together in a mass, just where the middle of the bends bring them near each other; after an interval of green comes the sub-dorsal line of very deep pink, and at a less interval a thicker and rather sinuous lateral line, and at a wider interval again below a sub-spiracular line of the same deep pink colour; the tubercular warts are whitish with minute black central dot bearing a fine short bristle, the anterior pairs of the trapezoidals are quite close to the crimson outer curves of the dorsal design; one wart occurs upon the anterior thickest part of the lateral sinuous line, another behind each spiracle, and others again beneath: the roundish spiracles are blackish with pale centres; the yellow-green of the back is more yellow close to the crimson design, and also on the tumid spiracular region, which on the posterior segment and edge of anal flap is primrose-yellow; against this the outer crimson surface of the anal legs contrasts strongly; beneath on the green belly are three paler lines, the central one the more noticeable: as the larva matures the crimson markings of the back become purplish, and the general ground a deeper green, though the spiracular ridge remains yellowish to the last.

The foregoing describes what I believe to be the typical or complete design of the larva, for it was the one shown by all the larvæ in 1880, and by most in 1881, but amongst the latter there occurred three or four of a variety showing an incomplete form of the dorsal design, which may be regarded as substantiating in a manner the description in the Manual after Freyer.

In this variety the dorsal line as usual is complete throughout, but at the beginning of every segment the two outer or curving lines are absent as far as the first pair of warts, and the pink ground so faintly shown as scarcely to be noted there, but the remaining parts of the design are quite perfect, and so stand out like a dark arrow-mark, or in other words a very elongated triangle at the end of each segment, through which passes the continuous dorsal line.

There were also two or three larvæ with the full pattern, but of much duller colouring, being pale brownish with a pink tinge, and the lines of the pattern also duller.

The larva goes into a light soil for its final change, and forms a compact little cocoon not quite three-eighths of an inch long and about half as wide; the pupa measures five-sixteenths of an inch in length, it is without any peculiarity of form, and of a bright yellowish-green colour for some time, having a broadish stripe of crimson down the middle of the back of the abdomen, suggestive of the larval design, and with rather a glossy surface.

Emsworth: *December 7th*, 1881.

A NEW SPECIES OF *HEMITELES.*

BY E. PARFITT.

HEMITELES PERSECTOR, *n. sp.*

Nigra, abdominis segmentis 2-4, *antennarum basi, pedibusque rufis.*

Shining, with no preceptible sculpture, metathorax sub-opaque.

Head transverse, face rather prominent below the antennæ, clypeus distinctly separated from the face, cheeks not buccated, space between the eyes and mandibles wide, face between the eyes wider below than above, covered with short pale fulvous pubescence, antennæ long and slender, flagellum 17-jointed, 1st joint larger than the 2nd, about five times as long as wide, joints not quadrate. Jaws and palpi bright yellow. Thorax slightly pubescent, about one-half longer than high, parapsides faintly impressed; the upper part of the metathorax short, back rather sloping, supero-medial area transverse, rounded at the sides, slightly incurved in front, and faintly closed behind, posterior face with two distinct central lines, posterio-medial area elongate, sides almost parallel. Metathoracic spiracles circular. Abdomen: 1st segment elongate, narrow, about twice as wide at the apex as at the base. Spiracles placed just behind the middle, post-petiole with two keels, and a slight depression between them, nearly half as long again as the hind coxæ and trochanters; remainder of abdomen ovate, segments transverse, the 4th and following very short, aculeus nearly two-thirds the length of the abdomen. Legs rather slender. Wings: areolet pentagonal open at the apex, inferior exterior angle of the discoidal cell projecting beyond the corresponding angle of the areolet, stigma moderate, transverse anal nervure sub-opposite, divided below the middle. Scape, 1st and 2nd joints of flagellum, 2—4 segments of abdomen, and legs red, the latter

This species is very distinct from *H. gyrini* described in the Ent. Mo. Mag., vol. xviii, p. 79, and is, so far as can be ascertained, undescribed. It was bred from some pupæ of *Gyrinus natator*, collected by the Rev. J. Hellins at the same time and place as stated before in regard to *gyrini*, but this did not come out so soon as that species, and consequently was not described nor in time for my catalogue of *Ichneumonidæ* of Devonshire. This insect has the facies of *gyrini*, but it has the basal half of the antennæ red, and the thorax is quite smooth without any lines or markings, and the abdomen is broadly ovate, all of which distinguish it from the former species.

Exeter: *November* 30*th*, 1881.

NOTES ON BRITISH *TORTRICES*.

BY C. G. BARRETT.

(*continued from p.* 154).

On page 241 of Vol. xiv of this Magazine are some remarks upon a supposed aberrant form of *Brachytænia Hartmanniana*, L. (*scriptana*, H.), found by Dr. Wood in Herefordshire in the year 1877. During the succeeding three years, although constantly looked for, it was not seen; but Dr. Wood's unflagging zeal has been rewarded this year by the capture of nearly a dozen specimens. These he has sent for examination, pointing out their perfect constancy in shape, colour and marking, and the reliable marks of distinction from *Hartmanniana*, which is well known to be little liable to variation, and strongly urging the claim of this form to rank as a distinct species.

I am inclined to think that the claim is good, and, therefore, propose to name this pretty species after the entomologist who has devoted so much time and pains to working it out.

BRACHYTÆNIA WOODIANA, *n. sp.*

Head and front of thorax black, upper part of thorax whitish, antennæ light brown, fore-wings chalky-white with very numerous small clouds of bluish-grey, basal blotch only indicated by a dark grey cloud on the base of the dorsal margin, central fascia broken, consisting of a blue-black triangular or sub-quadrate costal blotch, having an extension or neck connecting it with a blue-black, undulating, longitudinal streak near the middle of the wing, below which are two pale grey clouds. Costal streaks short, blue-grey. Beyond the central fascia are three delicate curved lines of tiny blue-grey clouds, as in *Penthina betuletana*. Cilia whitish, dotted with grey. Hind-wings rather dark grey with similar cilia. Exp. 7½ lin.

Tarrington, near Ledbury, Herefordshire, July.

It is slightly smaller and less robust in body than *Hartmanniana*, and the costa of the fore-wings is not so much arched. It also differs from that species in its white ground colour, blackish head and collar, the form of the large costal blotch, and the arrangement and number of its delicate cloudy markings.

It is found exclusively about apple trees, upon which its larva doubtless feeds, although it has not yet been discovered, and one of the moths taken this year was actually running up the trunk of an apple-tree with unexpanded wings just out of pupa. *Hartmanniana*, which occurs on willow trunks in the neighbourhood, has not been found in the orchards at all, nor have the two species been found anywhere mixed together.

It is probable that the species is widely distributed in Herefordshire, as a specimen has been taken near Leominster.

Pembroke: *9th December*, 1881.

Notes on the past season, and on the occurrence of certain Lepidoptera and Coleoptera in the Forest of Dean.—In this part of Gloucestershire the present year was from a naturalist's, standpoint, notable for the abundance of insect life that prevailed throughout April, May, June, and the opening days of July. Some of the commoner kinds of moths, such as *P. pilosaria*, *H. progemmaria*, *H. leucophæaria*, *T. stabilis*, and *T. viridana* were observed to be especially numerous, and two *Lepidoptera*, which are not apt to remain in the duplicate drawer so long as the before mentioned, viz.: *A. prodromaria* and *C. ridens* (some nice varieties) were nearly as common, being taken by the score, the majority of them as soon after emergence from the pupa as their full developement would permit. When these two species had lost their bloom, and while they were becoming tattered and torn, and assuming the bleached appearance indicative of Lepidopteral decrepitude, zest was given to a walk in the Forest by a good chance of taking a series of *N. cristulalis* and *T. extersaria*, varied now and then with fine examples of *N. trepida*, *N. chaonia*, *E. dolobraria*, while later on *H. velleda* (var. *carnus*), *S. fagi*, and *A. herbida* were to be found by trunk hunting. When in the month of June the beating stick and net were employed, *E. advenaria*, *A. prunaria*, *A. sylvata*, *A. Blomeraria*, *N. pulveraria*, and *B. lancealis* fell victims to this method of collecting. Owing, however, to a run of rainy or windy weather setting in just when the two "waves" were at their best, only a few specimens were obtained worthy of a place on the setting board. Last year they were by no means difficult to secure in good condition. In the wood, which is the head quarters hereabouts of "Blomer's wave," *L. rubricollis* turned up at rest on grass stems, and *C. propugnata* on trunks, and the larva of *P. galactodactylus* mustered in force on the underside of burdock leaves.

By the beginning of June, the spring moths that are common in the forest had passed away, and the ova they deposited had produced larvæ. These creatures were in myriads on the oaks; and when, in the first week of July, their ravages had reached a maximum, many an acre of woodland could not show a tree with more foliage on it than there would be in December. Larvæ-beating, however, turned out to be an extremely disagreeable occupation, chiefly on account of the numbers of a large dark bronze-green *Pentatoma* (?) the stick dislodged from the branches, so that I made only one trial of that kind of work, but from it I ascertained that the devouring host consisted in the main of "stung" caterpillars, and, accordingly, do not expect that an abnormal quantity of imagos will appear next year. A reference to the note-book shows that from July to the conclusion of the season, captures just here have been below the average, and consist principally of the commoner kinds of the *Heterocera*. The *Rhopalocera*, however, of which twenty-four species have been observed in the district, did not altogether fail to add to my stock of duplicates, though the only one taken was *V. c-album*, an insect I have looked for to no purpose hitherto in several localities. It was a charming pastime, therefore, one day last September to single it out from a mixed crowd of *urticæ*, *polychloros*, *Io*, and *Atalanta*, and to box a long series of it in good order, a mile or two from here, making the fiftieth of our *Diurni* with which I have had to do afield.

With respect to *Coleoptera*, many of those species I have recorded as taken in 1878—80 have occurred again this year under similar conditions; so such only are enumerated as in their capture present some point of difference, as compared with their predecessors. Thus *Cychrus rostratus* occurred by stone-turning; *Rhizophagus cribratus* by beating whitethorn blossom; *Corymbites pectinicornis* by searching grass-stems; *Lasia globosa* by examining felled trunks. Also some mention must be made of the extraordinary abundance of *Calosoma inquisitor* and *Silpha 4-punctata*. As an instance, one afternoon in June I bottled of the former more than a hundred examples, and dozens of the latter. The majority of them were either crawling or motionless on the trunks and branches or running along the ground, but a fair number were seen flying in the sunshine. These insects appear to be somewhat local, as they were common only in a comparatively small area. The check they exercised upon the devastating power of Lepidopterous larvæ was very palpable. In those portions of the forest in which the trees were stripped of foliage, I did not notice a single specimen of the larger beetle.

A note on some species hitherto not recorded, to the best of my belief, from here may be of interest, especially as the number of Coleopterists appears to be rapidly increasing, possibly because the study of the Order is so very attractive, from the diversity of structure and economy of its members, or because, at present, there is little liability of continental stocks being planted out, and their offspring being foisted upon one as indigenous. In carcase, *Silpha thoracica*; in toad-stool, *Gyrophæna gentilis*; by beating foliage and blossom, *Paramecosoma melanocephala*, *Rhamphus flavicornis*, *Magdalinus barbicornis*; from Sparganium, *Donacia linearis*; by sweeping, *Philonthus sanguinolentus*, *Cercus bipustulatus*, *Galeruca viburni*; on stumps, *Quedius scitus*, *Platypus cylindrus*; under birch bark, *Epuræa parvula*; on felled timber, *Brachytarsus scabrosus*; in decayed wood, *Pteryx suturalis*; in moss, *Mycetoporus clavicornis*.—A. E. Hodgson, Coleford, Gloucs.: November, 1881.

Rare Coleoptera in Scotland.—While spending a holiday this summer in North Britain, I took some examples of *Amara Quenseli*, *Harpalus 4-punctatus*, *Agathidium rhinoceros*, and *Hylurgus minor*. These were the principal captures, but *Miscodera arctica*, *Tachinus proximus* and *T. pallipes*, *Anthophagus alpinus*, *Acidota crenata* *Agathidium rotundatum*, *Hydnobius strigosus*, *Otiorhynchus maurus*, and a "pug" I do not recognise, which may be nothing more than a strange form of *Eup. succenturiata*, besides fine varieties of common insects, also occurred and perhaps are noteworthy.—Id.

Pterostichus vulgaris, &c., in a frog's stomach.—On opening the stomach of a dead frog, in the summer, I found inside it three large beetles : *Pterostichus vulgaris*, *Harpalus æneus*, and *Barynotus obscurus* : the two former were but little injured, and the latter was quite perfect in every respect, except that most of the scales had been rubbed off. These three beetles almost filled the stomach, and it seems strange that its thin covering can resist the jaws and claws of large *Carabidæ* ; there must be some poisonous effect in the saliva which destroys them at once.

I mentioned this fact to Mr. Matthews, who told me that the frogs had not got it all their own way : a little while ago, he saw a frog on his garden path, evidently in trouble, and, on examining it more closely, he found that a large *Carabus violaceus* had fast hold of it by the leg. He kept the frog to see what would happen to it, and it soon died, evidently poisoned by the acrid excretion of the *Carabus* : this excretion seems to be a powerful irritant poison, and to be capable of producing considerable pain if discharged over the human face, or any part of the body where the skin is thin.—W. W. Fowler, Lincoln : *December 9th*, 1881.

Lebia crux-minor in Japan.—On the 31st July I crossed an elevated pass in the centre of the main island called Shiwojiritogè, the altitude was nearly 3500 feet, and the temperature about that of a summer day in the south of England. The whole district was gay with the flowers of Siberian type, and there were no trees or shrubs, so that the general aspect viewed from a distance was that of the Sussex downs, but when seen close, the flowers were massed together, and rose one or two feet high. Here, on a species of *Arctium*, I found a large *Larinus*, and in beating to get specimens, one or two *Lebia crux-minor* fell into my umbrella, I soon discovered plenty of them feeding on the saccharine matter exuding from the burrs. Associated with them, I also discovered a new *Lebia*, which was, however, very scarce, and I secured but three or four during more than an hour's search. The number of the commoner *Lebiæ* I saw during the time must have been over 100, and they were all of the north European type with red legs, and I did not find one of the Italian var. *nigripes*, which is the form usual at Nagasaki, in the southern island of Kiushiu. If I am ever at Brighton again at the right time, I shall search the burdock for *L. crux-minor*.—G. Lewis, Grand Hôtel, Yokohama : *October 16th*, 1881.

Curious variety of Argynnis Paphia.—At a field meeting of our Naturalist's Field Club which took place near Saundersfoot, Pembrokeshire, last July, a capture was made of sufficient interest to be worthy of special record—a female *Argynnis* contrast to the ordinary form of the insect is very beautiful. This capture was made by the Vice-President, the Rev. Clennell Wilkinson, and the insect is now in his cabinet.—CHAS. G. BARRETT, Pembroke: *14th December*, 1881.

A new species of Coleophora (C. adjunctella, Hodgk.).—Quite a dozen years ago, on a salt marsh beneath Humphrey Head, near Ulverston, I took a considerable number of this insect, and sent it away pretty freely as *Col. salinella;* about three years ago I paid a visit with Mr. Threlfall to the same place, and a two days' hunt only yielded a score or so for each of us; since then I have made the acquaintance of the true *C. salinella* which I find is a totally distinct species from mine, *C. salinella* being a larger insect and of a pale yellow colour, whereas the insect which I propose to name *Col. adjunctella* is a shorter winged insect and of an olive-brown ground shade, it is clearly distinct from *cæspititiella* by the white streak that runs along the costa; also the wings are more arched, and in fine specimens there is almost an absence of streaks; the antennæ are much darker, nearly black and more robust than in *C. cæspititiella.* The food of the larva has yet to be discovered; there were neither rushes nor *Luzula* about that I remember; we had to get them by creeping on our hands and knees, the place being too bare to sweep and had to place our backs against the wind when we wanted to box any of the specimens.

Mr. Sang looked at my fine series and agrees with me as to its distinctness.—J. B. HODGKINSON, 15, Spring Bank, Preston: *December 5th*, 1881.

[Mr. Hodgkinson's insect is very distinct from any species of the genus with which I am acquainted. It resembles most nearly *C. badiipennella*, having like that insect a distinct pale costal streak from the base to the costal cilia, but the ground colour of the wings is far glossier than in *C. badiipennella.*—H. T. S.]

Larvæ of Scopula lutealis and S. prunalis.—Probably, during the last two seasons, I have collected and sent away more larvæ of *lutealis* than any one else in Britain; and I believe the very larvæ figured and described by Mr. Buckler were sent from here to Mr. Fletcher by myself. [Yes, this is so.—EDS.] With care, the two species are separable, but yet they are so much alike that I have scarcely ever sent away a batch of *lutealis* without saying "possibly a few *prunalis* may be mixed with them." I have had a tolerable batch of each species feeding side by side, and I have no hesitation in saying that only those accustomed to larva-rearing would have distinguished one from the other. *The* distinguishing character, I think, is the black spot so distinct on each side of the second segment in *prunalis*, but absent in *lutealis.* All being well at the end of May or early in June (Mr. Buckler's were late specimens), I shall be pleased to send these larvæ to any Lepidopterist who would care to compare the two species. I described this larva from a single specimen in 1877 (see Ent. Mo. Mag., xiv, 114).—GEO. T. PORRITT, Highroyd House, Huddersfield: *December 1st*, 1881.

Sericomyia borealis "singing" while at rest (cf. p. 159, ante).—A tinted figure of *Sericomyia borealis* will be found in my "Insect Variety," pl. iv, fig. 7, and at page 216 there is the following remark. "In addition to the instances preferred, I have heard the primitive spiracular notes of the hover-flies given out by a showy northern species, *Sericomyia borealis*, that frequents brambles in the West Highlands, as it alighted on rotten stumps with closed wings, to fulfil the maternal duty of oviposition." The observation thus recorded was made on the precincts of what was once the laird's estate at Whitehouse, on West Loch Tarbert, in Argyleshire; and in my note-book the entry runs thus: "19th of August, 1876. A large, yellow-belted hover-fly, depositing on the rotten stumps in the sunshine, it utters a plaintive note every time it settles with the wings closed over the back, but when it alights with them expanded it is mute. There is a slight tremulous motion at the extremity of the wings as it gives forth its note, which it does frequently, singing to itself as it were, as it sits. *Sericomyia borealis* and *Criorhina oxyacanthæ*, another large dipteron which mimics the carder-bee, are equally fond of the ragwort- and knapweed-heads." That the fly in question was the female, I am assured by the presence of a short ovipositor, that in one of my specimens shows a desiccated bunch of minute ova protruding; and that it was engaged in oviposition, its actions led me to infer. The economy of this group is, as is known, very various.—A. H. SWINTON, Binfield House, Guildford: *December 2nd*, 1881.

Sericomyia "singing" while at rest.—I have just read Mr. Bloomfield's note on *Sericomyia borealis*, and hasten to offer my mite of corroborative testimony to what he has published.

One day during the past autumn I went with a small party for a walk on Dartmoor, near Okehampton; after some miles of rough tramp up and down several tors, as the afternoon was drawing on, we found ourselves on a heap of stones on the top of Cawsand, and were glad to rest there awhile; before long, a piping sound was audible, and one of the party said the wind was whistling; but to this explanation I demurred, having some recollection of having heard the noise before, so, looking round, I soon saw several large flies resting on the stones, and was presently able to convince my friend that the sound came from them: the next thing was to try to capture one, but they were so watchful, that it was with great difficulty I managed to stun one with my felt hat, when I pill-boxed it, and brought it home for Mr. Parfitt; from him I learn that it is a *Sericomyia*, and, probably, the species mentioned by Mr. Bloomfield.

The first time these flies caught my attention was more than thirty-five years ago, when I was spending a holiday on Dartmoor, and I have since seen and heard them from time to time, but—of course, in the usual way—let them alone, for some Dipterist to look after.

How they make the noise, I cannot tell, but it is quite certain that they make it while resting on the stones.—J. HELLINS, The Close, Exeter: *3rd December*, 1881.

The "Revue Coléoptérologique."—The approaching publication of yet another monthly entomological journal is announced for February 1st, under the above title, devoted to bibliography, descriptions of new species, synonymy, &c., concerning *Coleoptera* only. The prospectus is issued by Mons. Constant Vanden Branden, of 69, Rue de la Madeleine, Bruxelles.—EDS.

Obituary.

John Gray died at his residence, Claygate, Esher, on November 27th last, at the age of 69. He was, we believe, originally a manufacturer at Bolton, but he little,[*] but his services to entomology were, nevertheless, great. It was in his yacht, the "Miranda," that the late Rev. Hamlet Clark made his voyage to Brazil, so graphically described in "Letters Home" (*cf.* Ent. Mo. Mag., iv, p. 120), and in which the late Mr. Wollaston made most of those voyages to the various Atlantic Islands that were so pre-eminently productive of scientific results, and during which Mr. Gray shewed himself a most enthusiastic collector and acute observer. He had been in failing health for some years. So long ago as 1850 he was elected a member of the Entomological Society of London, and his connection with the Society was continued until his death, as it also was with this Magazine, to which he was an original subscriber. Possibly his last public appearance amongst entomologists was on the occasion of the excursion of the Entomological Club to Esher some four or five years ago, and he was then in feeble health.

ENTOMOLOGICAL SOCIETY OF LONDON: *Oct. 5th*, 1881.—H. T. STAINTON, Esq., F.R.S., &c., President, in the Chair.

Mr. McLachlan exhibited a parthenogenetically-bred example of *Gastrophysa raphani*, sent to him by Dr. Osborne (*vide ante* p. 128).

Mr. Theodore Wood exhibited a *Notiophilus biguttatus* abnormally punctured.

Mr. Meldola exhibited, on behalf of Mr. Argent, several interesting varieties of British Butterflies.

Mr. Pim exhibited the example of *Harpalus discoideus* recorded in this Magazine (*ante p.* 112).

Mr. Fitch exhibited, on behalf of Mr. Bignell, *Formica umbrata, var. mixta*, Nylander, from Stonehouse, new to this country.

Mr. Olliff exhibited an example of *Papilio Americus*, Kollar, with abnormal neuration occasioned by deformity in one wing.

A communication from the Colonial Office was read regarding the damage occasioned to cocoa-nut trees in the Fiji Islands by *Lopaphus cocophagus*, one of the *Phasmidæ*; and also respecting the ravages of locusts in Cyprus.

Prof. Westwood communicated a description (with figures) of an insect from Ceylon, apparently immature, the ordinal position of which was doubtful. He proposed for it the generic term *Dyscritina*.

Dr. Sharp communicated descriptions of new species of *Coleoptera* from the Hawaiian Islands.

Mr. C. O. Waterhouse read descriptions of new species of *Rutelidæ* from Ecuador.

Mr. Cameron communicated a paper on new species of *Hymenoptera*.

November 2nd, 1881.—The President in the Chair.

Mr. C. O. Waterhouse exhibited a variety of *Ourapteryx sambucaria*, in which the transverse lines approximated, taken by his brother at Wandsworth.

Mr. W. F. Kirby exhibited the specimen of *Antheræa macropthalmus*, n. sp., from the Gold Coast, described in this Magazine, *ante* p. 146. Also a series of beautiful dissections of saw-flies and other *Hymenoptera*, made by Mr. Cameron, with especial reference to the "saws" of the former, as indicating specific differences. A discussion ensued as to the most suitable objective for entomological purposes; Messrs. McLachlan and Waterhouse preferring a two-third inch; the Rev. A. E. Eaton stated that the variation in the magnifying power of objectives by various makers was a source of much confusion of opinion on this point.

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[*] In Hagen's "Bibliotheca," vol. i, p. 302, "John Gray, Wheatfield House, near Bolton-le-Moors," is credited with the publication of various entomological notes in Morris's "Naturalist" from 1851 to 1854, including the description of a new Longicorn beetle (*Prionus Westwoodianus*). We believe this results from mistaken identity. All these notes were by a "John Gray," of *Glasgow*, a different person (so we think) from the subject of this notice.—EDS.

The Rev. A. E. Eaton exhibited a portion of honey-comb built against a wall without any protection whatever; it contained living bee-larvæ: also a specimen of a wood-louse, *Porcellio scaber*, captured in Iceland by Mr. Coles, and a series of beautiful drawings of wood-lice, executed by Mr. Hollick.

Dr. Lang exhibited an example of *Lycæna Icarus, var. Icaroides.*

Mr. Distant exhibited a species of *Cicadidæ* from Borneo, probably forming a new genus, in which the "drums" were developed to such an extent, as to equal or exceed the length of the abdomen.

Mr. Billups exhibited an example of *Dufourea vulgaris*, from Woking (*cf. ante*, p. 161).

Sir S. S. Saunders exhibited *Scleroderma domestica*, Westwood, received from M. André, bred from the larva of a longicorn beetle; also *Diptera* injurious to figs.

The President exhibited, on behalf of Dr. Buchanan White, some remarkable tubes (some nearly an inch in length) manufactured by Lepidopterous larvæ, from the white excrement of dogs; they were from Aden. He likewise remarked on the differences between the larvæ of *Cerura vinula* and *erminea* (*cf. ante*, p. 161), with respect to a moth from Hertfordshire, received from Mr. Piffard, and which the latter thought might be *C. erminea*, an opinion in which the meeting did not agree.

Mr. C. O. Waterhouse exhibited a specimen of *Aëpophilus Bonnairei*, Signoret, from the late Mr. F. Smith's collection, labelled "Polperro" (*cf. ante*, p. 145).

Mr. Butler concluded his paper on the Heterocerous *Lepidoptera* of Japan.

Prof. Westwood communicated a paper on the *Diptera* destructive to cereals in Britain.

December 7th, 1881.—The President in the Chair.

Mr. A. R. Grote, the American Lepidopterist, was present as a visitor.

A. J. Scollick, Esq., of Albion Lodge, Putney, was elected a member.

A letter was read from the Colonial Office regarding the plague of locusts in Cyprus, and stating that on further search the egg-tubes of the locusts were found to be much infested with the parasitic larvæ of *Bombyliidæ* (numerous tubes and parasites were exhibited), although previously believed not to occur in the island.

Mr. W. C. Boyd, exhibited an example of *Ennomos tiliaria*, in which the two transverse lines on the wings were confluent for a portion of their length.

Mr. C. O. Waterhouse exhibited *Scenopinus fenestralis* bred from root of *Aconitum*, and *Phora rufipes*, parasitic on *Nematus ribesii.*

Mr. Pascoe exhibited a larva of some large species of *Myrmeleonidæ*, which had been found living in this country in a barrel of currants imported from Zante.

Mr. McLachlan exhibited weevil-larvæ (possibly of *Brachycerus*) sent to him by Mr. G. F. Wilson, and stated to be causing great damage to Japanese lilies in Mr. Wilson's garden at Weybridge.

Mr. Oliffe exhibited *Harpalus cupreus*, Dej., a very rare British beetle, captured by Mr. Horne, in the Isle of Wight.

Mr. Pim exhibited a specimen of *Telephorus* from West Wickham that he had been unable to identify; it was stated that it was possibly a form of *T. lituratus.*

Sir S. S. Saunders read further notes from Mons. André respecting a species of *Scleroderma* parasitic on a Longicorn larva.

Mr. C. O. Waterhouse read notes (illustrated by diagrams) on *Blastophagus sycomori* and *psenes*, of Linné, detailing the results of his examination of the specimens in the Linnean cabinet. He was of opinion that, although the specimens considered by Sir S. S. Saunders as types of *psenes* bear no label, or other indication in handwriting, they are veritable types, and the identical specimens received by Linné from Hasselquist. Sir S. S. Saunders made a long explanation to the same purpose.

Mr. Butler communicated a paper on Heterocerous *Lepidoptera* collected in

NOTES ON *TENTHREDINIDÆ.*

BY P. CAMERON.

(*Continued from vol.* xvii, *p.* 67).

TENTHREDO SCOTICA, *sp. n.*

Black; clypeus, labrum, a line round the lower part of the eyes, one on the pronotum, two spots over the posterior coxæ, apical three-fourths of the under-side of the front coxæ, and an irregular spot on the apex of the two hinder ones, white. Legs pale yellow, except the greater part of the coxæ, which is black, and the extreme apex of the posterior tibiæ and the tarsi, which are dull fuscous. Wings almost hyaline, costa dull reddish, stigma black. ♀. Length, 5¾ lines.

Similar to *T. dispar* in size and form, but having (apparently) the antennæ and metatarsi shorter, the head more opaque and punctured, and differing otherwise in the coloration of the legs and face; the saw also differs.

Rare. Taken near Dumfries, in June.

THE BRITISH GREEN SPECIES OF *NEMATUS.*

With the valuable assistance of Mr. J. E. Fletcher, I have subjected our green species of *Nematus* to a revision, and have satisfied myself that we possess seven, if not eight, species. These are:

1. *N. Bergmanni*, Dbm., *sec.* Thoms., =*prasinus*, Htg.

2. *N. glutinosæ*, *sp. n.*

Green, or testaceous-green; the space enclosing the ocelli, the usual marks on mesonotum (as in *miliaris*), a ring surrounding the cenchri, a small one behind them, and a row of transverse marks on back of abdomen (becoming narrower towards the apex), black. Antennæ somewhat shorter than the body, filiform, black, fuscous beneath, the 3rd joint a little longer than 4th; the head bulges out distinctly behind the eyes; looked at from above, the front projects sharply from the surrounding parts, and is furrowed between the antennæ. The frontal (pentagonal) area is well defined and square at the apex; the antennal fovea is indistinct, but a well-marked furrow comes down on either side of it from the outer side of the frontal area, and curves round the base of the antennæ. The central furrow on vertex is well defined, broad in front, narrow behind. Spurs a little more than one-fourth of the length of the metatarsus, being as long as the cerci. Stigma greenish-white.

The ♂ has the antennæ longer than the body, with the 3rd joint shorter than the 4th; the lower part of the body and the sides of the abdomen above are rufescent; the upper part black, the thorax entirely so, save an incomplete ring on scutellum, the central part of which is black. The hinder tarsi are fuscous-black; the stigma fuscous. Length, 2½—3 lines.

Very similar to *miliaris*, Pz., =*viridis*, Htg., = *microcercus*, Thoms., but the front is wider between the antennæ, and does not project so much; antennal fovea less defined, head smaller, cenchri smaller, spurs shorter compared to the metatarsus, which is itself shorter compared to the 2nd joint, abdomen with a broad and continuous black band, scutellum marked with fuscous in the centre, and the frontal area more distinct.

The larva feeds on alder. It is green, the head is of a darker green, especially on the top; a black line goes from the top to near the eyes, and another line goes from the top half way down the face, mouth brownish; mandibles black at the tips. The body is covered with tubercles of a darker colour than the body, and generally irregularly oblong in shape. On the 2nd and last segments they are somewhat irregularly arranged, but on the middle ones they are usually in two pairs above, and three single ones in a line below them, while there is a longer, slightly curved one over the abdominal leg, and one or two smaller tubercles over that. Two curved lines are over the legs, which are glassy-white; the claws are brown. On the back are two white lines; there is no distinct black line along the sides, but a thin white one, which runs through the spiracles. The cerci are black, as well as the space immediately behind them.

It is double-brooded, and is freely parthenogenetic in confinement, the eggs laid by the virgin females yielding only males.

Common in Scotland, and at Worcester.

3. *N. miliaris*, Pz., = *viridis*, Htg.

4. *N. salicivorus*, *sp. n.*

Pale testaceous-green; the vertex in the middle (the black being continued as a small rounded mark behind), the usual three marks on mesonotum, the space between the cenchri (separated in the middle), black; on the base of abdomen are one or two fuscous transverse marks. Antennæ slender, as long as the body, black, fuscous beneath, the 3rd joint slightly shorter than 4th. Head slightly narrowed behind the eyes, broadly rounded in front, but retreating on the outer side of antennæ, and projecting, not sharply, between them; frontal area well-marked, its lower end incurved at the centre, through the upper part of the large, distinct, oval, antennal fovea projecting into it; furrows on vertex distinct, but not reaching to the back; there is no central furrow. Clypeus with a shallow indentation. Cerci as long as the hinder spurs. Wings as in *miliaris*. Length, 2½—3 lines.

Of similar size and coloration (except that the black, or, rather, fuscous, markings on abdomen are confined to the base) to *miliaris* and *glutinosæ*, but it differs from both in having the head much more swollen in front, the part between the antennæ being rounded and not furrowed in the centre, the frontal area is less raised, and not truncated at the apex, the antennal fovea is very distinct, while the curved furrows which come down on either side of the antennal fovea, so

The larva has the body dark green; the head is green; on its centre, in front, is a long black line which reaches near to the mouth; above, over the eyes, is a much shorter lateral line. Over the legs is a blackish waved line, and above that again is a less distinct line. On the thoracic segments are some tubercles, while over the anal segment is a black mark, cleft behind, where it is broader than it is at the apex; the cerci are black. A thin white line runs through the spiracles.

The larva of *salicivorus* may be known from that of *miliaris* by the much longer central stripe and broader lateral one on head; by the less clearly indicated black stripe on the sides of the body above, by the clearly indicated waved lines over the legs, by the legs wanting the oblique black mark in front of them found in *miliaris*, and by the distinct black mark over the anus. In habits they are identical, and they may be sometimes found feeding on the same sallow bush.

Clydesdale, Worcester.

5. *N. curtispina*, Thoms.

6. *N. palliatus*, Thoms.

7. *N. lacteus*, Thoms.

Glasgow: *January*, 1882.

DESCRIPTION OF THE LARVA, &c., OF *HYDRŒCIA NICTITANS*.

BY WILLIAM BUCKLER.

As I am not aware of any other than the very brief description of the larva of this species, from Treitschke, in Stainton's Manual, I am induced to offer one resulting from my own observations.

My first acquaintance with the larva was in August, 1862, when Mr. Hydes, of Sheffield, sent me six full-grown examples, reported to have fed on some kind of grass, but as I could not then obtain any more precise knowledge of their habits, I contented myself with a figure from one of them, and that figure soon proved very serviceable in protecting me from an error, when a flower-head of *Iris pseudacorus* with a larva of *nictitans* placed in it, was sent to me as that of *Apamea fibrosa*—a larva which in all the subsequent years has not yet been forthcoming!

However, sixteen years later by a mere chance I was able to improve my acquaintance with *nictitans*, for on 7th of June, 1878, I happened to pick up a small stone that rested on a very little tuft of *Poa maritima* in gravelly soil, near a salt watercourse, and found I had torn away with the stone a silken covering from a very young *Noctua* larva, apparently unknown to me, which I brought home as a prize to be carefully tended, watched, and figured; it soon moulted, and my interest in it increasing, I again visited the spot in about a week when I found three rather larger examples, and again two more of them on the 20th of June while getting fresh tufts of the food-plant, and in the same way subsequently two others; the larvæ when found varied in length from a quarter of an inch to an inch, and then only when approaching their last moult could I suspect what species they were, though when they neared full growth my previous suspicion ripened into certainty of their identity, which in August following was confirmed when I bred the eight moths, comprising the usual sexual varieties of colouring, from the 4th to 20th of the month.

The habit of this larva is to feed on the bleached portions of the grass close to the soil, and to spin for itself there a case of whitish silk closely and firmly invested with the food-plant which forms at once a snug dwelling and protection, and in most instances the shelter afforded by a stone was utilized, even within a few inches of salt water; it rather surprised me to find this species in such a littoral habitat, never having met with it before, though I had known the moth taken at light in a grassy place bordering a wood four miles away inland, and understood that it occurred commonly on open moors and other similar localities in many parts of the kingdom.

The young larva, when a quarter of an inch to three-eighths in length, is of ivory-whiteness striped longitudinally with purplish-crimson, the head white with black ocelli and dark brown mouth; after a moult in about five days later it assumes a little more colour, when the head is pale whity-brown as are also the neck and tail plates, each plate having two pairs of minute blackish-brown dots, the ground colour of the body is a faint greenish-drab, which shows transversely at the segmental divisions and in the wrinkles, as well as in the broadish dorsal stripe, the sub-dorsal and lateral stripes and the whole of the belly, the alternating dark stripes are now of crimson-brown, broadest along the back of which they mark the boundary, the two below on the side are narrower and follow the sub-dorsal and lateral ones, the spiracles occurring at the bottom of the lowest.

On attaining nearly the length of an inch, its stoutish form is noticeably stoutest at the third and fourth segments, the darker colouring of the back and side stripes is now changed to pinkish-grey, and that of the paler stripes to a light rather greenish flesh tint, the shining head is of a warm flesh colour and dark brownish at the mouth, the glossy neck-plate is light yellowish-brown rather inclining and similarly margined; the blackish-brown tubercular dots are very small along the back as far as the eleventh segment, then rather larger on the twelfth and front of the thirteenth; the black oval spiracles at the bottom of the lower grey side stripe are accompanied with blackish-brown spots peculiarly characteristic, viz.: one in front and one above of ordinary size, and a very large one behind the spiracle, and in corresponding position on the third, fourth and twelfth segments this is even larger still and somewhat trilobed in shape, two other rows of single spots smaller and paler occur below.

When full-grown the larva is about an inch and a quarter in length, rather broadest on the third and fourth segments, tapering thence a little to the head, also in a very slight degree towards the anal segment which is rounded off behind; the characteristic head plates, and spots remain as before, but the previous contrast of colours between the lighter side stripes and darker back is now greatly reduced, and the light broadish dorsal stripe also from its softened edges and showing faintly within a slightly deeper greyish pulsating vessel.

On entering the earth the larva encloses itself in an earthen cocoon of weak cohesion; the pupa varies from five-eighths to three-quarters of an inch in length, and is of stoutish proportion, of the usual *Noctua* form, the abdomen convexly tapering from the movable segments to the anal tip, which ends with two very fine projecting points; on the back of four of the middle abdominal rings just at the beginning of each is a narrow transverse band of punctate roughness, while all the other parts are smooth and shining, and the colour is of deep mahogany-brown.

Emsworth: *January 7th,* 1882.

ON FIVE NEW BRITISH *HYMENOPTERA*; WITH A SYNOPTICAL TABLE OF THE GENUS *SPHECODES*.

BY EDWARD SAUNDERS, F.L.S.

Of the five species I am about to describe, two belong to the very difficult genus *Sphecodes*, and to show how they differ from their allies, I have given a table of all our British species, indicating the novelties by *n. sp.* after their names. I fear that in many collections the species in this genus are mixed, as it is only by very careful study of the genitalia in the ♂, and the apical segment in the ♀, and the alar hooks in both sexes, that they can be separated with any certainty. We are indebted to both Von Hagens and G. C. Thomson for the careful structural study they have made of this genus, and I have borrowed largely from their remarks in the characters I have used.

SPHECODES.

(4) 1. Posterior wings with 7—10 alar hooks; antennæ in ♂ long, 3rd joint not one-fourth so long as the 4th.

(3) 2. Vertex of the head in both sexes with its sides converging rapidly behind the eyes. ♂ genitalia with the squama produced into a membranous wing on its inner margin, and terminating in two unequal processes densely clothed with long hairs, of which the upper process is much longer than the under, and is produced and widened at the apex, the widened apices crossing each other. ♀ with the apical dorsal valve narrow and linear ....GIBBUS.

(2) 3. Vertex in both sexes usually more or less quadrate (though very variable in this respect). ♂ genitalia with the squama unwinged, and terminating in two sub-equal processes, sparingly clothed with short hairs. ♀ with the apical dorsal valve wide and flat.......................SUBQUADRATUS.

(1) 4. Posterior wings with 5—6 alar hooks; antennæ in ♂ short, 3rd joint much more than one-fourth the length of the 4th.

(10) 5. Genitalia of the ♂ with the stipites not grooved; antennæ with the joints much produced and rounded in front. ♀ with the puncturation of the thorax large and close, 3rd segment of the abdomen without a lateral black spot or fovea.

(9) 6. Surface of genitalia in ♂ longitudinally striate, 2nd sub-marginal cell longer than wide in both sexes.

(8) 7. Larger; ♂ genitalia with the sagittæ very narrow, and fringed with short hairs, the squama membranous and somewhat quadrate, with a thickened semi-lunate central region. ♀ with the apical dorsal valve wide, slightly reflexed and shining at the edges.....................PILIFRONS, Thoms.
= *rufiventris*, Sm., *nec* Wesm.

(7) 8. Smaller; ♂ genitalia with the sagittæ much widened at the base, the squama produced into two processes, of which the under one is rather the longer. ♀ with the apical dorsal valve narrower, dull, and with an impression running parallel to its edge round its apex......1. SIMILIS, Wesm., *n. sp.*
Bull. Acad. Brux., 1835, T. ii, p. 279.

(6) 9. Surface of genitalia in ♂ finely rugose, not longitudinally striate, 2nd submarginal cell, in both sexes, on its lower margin, as wide as long, narrowed above......................................2. PUNCTICEPS, Thoms., *n. sp.*
Op. Ent., 100, 8.

(5) 10. Punctures of thorax fine and distant, genitalia of the ♂ with the stipites widely grooved. ♀ with the 3rd segment of the abdomen generally with

3. Colletes picistigma, Thoms., Hym. Scand. ii, p. 165.

Like the other smaller species of the genus in general appearance, but the ♂ has the first abdominal band interrupted, the basal segment largely and closely punctured, and the sixth ventral segment shining, strongly punctured, and with a shallow fovea on each side near the apex; each segment beneath has also an entire fringe of short hairs, in this respect resembling *succincta* and *marginata*; but the former of these may be known by the two deep foveæ of the sixth ventral segment, and the latter by this segment being simple, with only a slightly raised dorsal line; the genitalia have the apical portion of the stipites about equal to the basal, the apical pencil of hairs reaching to about the end of the sagittæ; the sagittæ have their lateral membranous wings projecting beyond the end of the thicker portion, somewhat turned down at the apex and rounded.

The ♀ has the pubescence of the thorax rather of a brighter red than in its allies; the abdomen slightly shining, but with its basal segment largely and closely punctured; its best characteristic is that it lacks the long scattered hairs, which clothe the whole basal half of the first segment in *fodiens* and *succincta*, although the segment is clothed with short hairs at the sides and at the extreme base. The colour of the abdomen also is of a particularly deep black, and the bands whiter than in the other species.

I have taken the ♀ at Hastings, Falmouth, Hayling Island, Littlehampton, and Southwold. Mr. Bridgman has taken it at Norwich. The capture of the ♂ by Sir S. S. Saunders in Hampshire was recorded in our December number.

4. Halictus brevicornis, Schk., Jahrb. Ver. Naturk. Nassau, xvi, 1861, p. 310.

This little species, of which I have at present only seen British specimens of the ♂, is very distinct, and, considering the difficulty of the genus, tolerably easy to recognise by the following characters:

♂. The antennæ are shorter than in most of the black species; the thorax is deeply punctured, the punctures being somewhat remote, *i. e.*, about the width of two punctures apart; the surface is shining, and nearly smooth; the punctures of the scutellum are rather larger and more remote; the metathorax is longitudinally rugose at the base, its brow somewhat rounded and smooth; the abdomen is short and oval, slightly shining, finely and clearly punctured on the first three segments; beneath there are a few rather short hairs; extreme base and apex of tibiæ, and the whole of the tarsi, pale.

♀. Head very finely and closely punctured; clypeus very largely and remotely, fringed in front with long golden hairs, its apical margin truncate, and produced at each side into a triangular tooth: mesothorax finely and remotely punctured, in front with a deeply impressed central line: metathorax as in the ♂; abdomen with the first segment shining and scarcely punctured, the rest very finely and closely punctured, with the apical margins discoloured, clothed with ochreous-grey hairs; beneath with long fringes of grey hairs on each segment.

I have described the ♀ from a continental specimen, kindly sent to me by Mr. C. Ritsema. The ♂ I have taken at Hayling Island and Bournemouth, but only in single examples.

The only species it could be confounded with is *H. villosulus*, but its smaller size, finer puncturation, and shorter antennæ in the ♂, readily distinguish it.

5. EPEOLUS PRODUCTUS, Thoms., Opusc. Ent., p. 91, Hym. Scand., ii, p. 210.

♂ differs from that of *E. variegatus* in having the two tubercles of the labrum situated nearly across the middle, instead of considerably below the middle as in that species, and the apex of the labrum bidentate instead of simple, the second segment of the abdomen beneath more shining and more sparingly punctured, the apical dorsal valve widely rounded with parallel sides.

♀ differs from that of *E. variegatus* in having the labrum and the second abdominal segment as in the ♂, the intermediate and posterior femora black, except at the base, the second, third and fourth abdominal segments with a round dorsal spot on each side distinct from the extreme lateral spot, whereas in *variegatus* the two spots on the second segment are confluent, and those on the following segments not so round and more transverse. I do not, however, attach much importance to this character, although it is easily noticeable. The fifth segment beneath is much more narrowly rounded than in *variegatus*, and the posterior femora towards the base outwardly, more largely and rugosely punctured; in size it is generally rather larger than *variegatus*.

I have taken this species at Hayling Island and Littlehampton, and Mr. Bridgman has taken it at Norwich; in fact, it appears to be our common species. I have only taken *variegatus* at Falmouth, and seen a ♀ from Reigate, taken by Sir Sidney Saunders.

Holmesdale, Upper Tooting:

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ.*

BY R. H. MEADE.

(*continued from page* 176.)

12. HOMALOMYIA, Bouché.

Gen. ch.—Head smooth and semi-circular; eyes large, covering the sides of the head; bare, and sub-contiguous or approximate, in the males; arista sub-pubescent or bare, with the second joint often rather elongated; alulets of moderate or small size, with the scales more or less unequal; abdomen mostly elliptical and flattened in the males, and marked with an angulated dorsal stripe; oval and immaculate in the females; wings with the anal vein shortened, and the axillary vein curved towards its extremity; legs with the middle tibiæ tuberculated, or thickened and ciliated, in the males.

Sect. 1—*Legs more or less pale.*

1. APRICA, Hal.
   Passerinii, Rond.
2. FUSCULA, Fall.
3. PALLITIBIÆ, Rond.

Sect. 2—*Legs wholly or nearly black.*

Div. i—*Halteres pale.*

4. SCALARIS, Fab.
   saltatrix, Desv.
5. CANICULARIS, Lin.
   M. domestica minor, Deg.
6. INCISURATA, Zett.
7. MANICATA, Meig.
   peniculata ?, Rond.
8. ARMATA, Meig.
9. SPISSATA, *sp. n.*
   armata ?, Macq.
10. HERNIOSA, Rond.
11. MUTICA, Zett.
    lepida ?, Wdm.
12. SOCIELLA, Zett,
13. SERENA, Fall.
    lugubrina ?, Zett.
14. FLORICOLA, Meig.
    cilicrura, Rond.

Div. ii—*Halteres black.*

15. CARBONARIA, Rond.
    ærea ?, Meig.

This is one of the best defined and most natural groups among the *Anthomyiidæ*. It includes the *Chorelliæ* of R. Desvoidy, so named from the habit of the males to perform choral dances in the air. The peculiar structure of the last two longitudinal veins of the wing (see fig.*) is common to this and the three following allied genera, viz., *Cœlomyia*, Haliday, *Piezura*, Rondani, and *Azelia*, Desvoidy.

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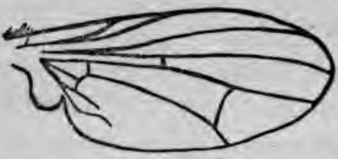
* Wing of H. aprica.

H. APRICA, Hal.



This fine species is the largest and most highly developed in the genus. The middle and the posterior legs have the femora and tibiæ of a bright reddish-yellow colour in both sexes. The front pair have the femora and tibiæ dusky in the males. The females have the coxæ yellow, and also the anterior femora and tibiæ in many specimens; but sometimes they are darkened, as in the males. The abdomen is sometimes grey in both sexes, and sometimes partly yellow and translucent. It is generally distributed but not common. The females are more frequently seen than the males.

H. FUSCULA, Fall.

Of this rather peculiar and well-marked species, which has the tibiæ reddish or piceous, I have only seen a single female, which I captured near Edinburgh in August, 1875. The best description is given by Zetterstedt, in the *Diptera* of Scandinavia. He notices the male in the 4th vol., p. 1686, and, in vol. 8, p. 3310, gives a correct account of the female, which has the frontal space comparatively narrow. He says that both sexes of this fly were found by Stæger in the nest of a humble bee. The specimen which I found was covered by a number of *Acari*, similar to those which infest bees and beetles, so perhaps it had been in a bees' nest.

H. PALLITIBIÆ, Rond.

This small species has the knees and tibiæ pale, in both sexes. It appears to be rare; I have one pair (♂ & ♀) captured in the neighbourhood of Bradford.

H. SCALARIS, Fab.

This common species, characterized by the projecting tubercle on the inner sides of the middle tibiæ of the males, sometimes has the anterior tibiæ yellow at their bases, when it forms the *A. manicata* of Macquart (not of Meigen). I have a variety in which the second and third abdominal segments are yellow and translucent at their sides, as in *H. canicularis*; this is probably the same as the *A. subpellucens*, Zett.

H. CANICULARIS, Lin.

This, though the best known and the most common species, and the one which is generally considered as the type of the genus, really possesses fewer characteristic features than most of the others; the eyes being proportionately smaller, covering less of the cheeks, and the middle tibiæ being simple, without any tubercle or marked thickening.

H. INCISURATA, Zett.

This species bears a very close general resemblance to *H. scalaris*, in size, shape and design; it differs, however, by having the thorax grey, not black, marked by two or more less distinct stripes, and by the intermediate tibiæ being simple, as in

Zett. The females of *H. incisurata* and *H. scalaris* are very similar, but may be distinguished by the neuration of the wings, the third and fourth longitudinal converging a little in the latter, and being almost parallel in the former species. It is not very common, but generally distributed.

H. MANICATA, Meig.

The males of this pretty species are characterized by having the anterior knees pale, and also the fore tibiæ, with the exception of their apices, which are black, thickened, and furnished on their outer sides with a little tuft of black hairs, which is sometimes adpressed so as to be easily overlooked; a long straight spine also projects downwards from the base of each middle coxa. The females may be distinguished by the pale colour of the fore tibiæ. Not common.

H. ARMATA, Meig.

This little species differs from most of the others by having the abdomen wide and less elongated. Meigen's description is very correct, but he omits to mention that the posterior tibiæ are curved as well as thickened, and ciliated with longish hairs on both sides. The females of this and many other species of *Homaloymia* are very difficult to determine, unless they are captured together with the males. Generally distributed.

H. SPISSATA, *sp. n.*

Mas, niger nitidus, abdomine oblongo depresso glauco, linea dorsali angulata ornato; femora intermedia subtus hispida; tibiæ intermediæ nudæ abruptè spissatæ; tibiæ posticæ intus ciliatæ. *Long.* 2¼ *lin.*

Head: eyes sub-contiguous; arista bare.

Thorax, with the scutellum, black, shining, and unstriped.

Abdomen oblong and depressed, grey with glistening white reflections when viewed from behind, and appearing of a brownish-black colour when seen from before. It is marked by an interrupted dorsal band, which is dilated at the base of each segment into a triangular spot; anal processes very small.

Wings slightly nigrescent, third and fourth longitudinal veins parallel; external transverse vein nearly straight and upright, separated from the internal transverse vein by about twice the distance that it is from the termination of the fifth longitudinal.

Scales of *Calyptra* of moderate size and unequal length, and of a sordid white or brownish colour. *Halteres* yellow. *Legs* black, with the exception of the bases of the anterior tibiæ, which are testaceous; front pair simple; middle femora furnished beneath with longish black bristles, not extending to the apex, and arranged in two parallel rows; coxæ without spines; middle tibiæ abruptly thickened or tuberculated on their inner sides at about one-third from the lower end; tubercle smooth, not ciliated; posterior tibiæ slightly curved, somewhat thickened, furnished with a few long hairs in the middle of their inner surfaces, and with a number of bristles and hairs of irregular lengths on their outer sides.

This is possibly the *H. armata* of Macquart; it differs from *H. armata* of Meigen, and also from *H. manicata* of Meigen, by having the tubercular projection on the middle tibiæ smooth and not bearded with short hairs as in both those species.

The tubercle resembles that of *H. scalaris* in being smooth, but is proportionately smaller and less prominent.

I captured a single male of this rare species at Tingewick, near Buckingham, in August, 1873.

H. HERNIOSA, Rond.

This differs from all the other species in the genus by the males having a large projecting sub-anal process. The abdomen is black with grey reflections, but without any distinct dorsal stripe. The wings are slightly fuscous, and have the anal veins rather more elongated than usual, with the axillary veins straighter and placed almost parallel with the anal. It is rather an aberrant species, and appears to be rare; I have only seen three specimens, all captured in the neighbourhood of Bradford.

H. MUTICA, Zett.

This species is probably the same as the *H. lepida* of Wiedemann and others (not of Zetterstedt), and the *H. prostata* of Rossi and Rondani; but the descriptions given of these species are not sufficiently precise to enable one to determine the point with accuracy, and it is very likely that more than one distinct species have been mixed together under the name of *H. lepida*. For these reasons I have adopted the title of *mutica*, as the description given of that species by Zetterstedt agrees with the characters of the fly which I wish to discriminate. It is from 2 to 2¼ lines in length; the calyptra have the scales of moderate size, and of marked inequality; the thorax is black; the abdomen grey, with brownish-black reflections, and the usual angulated black dorsal stripe; the intermediate tibiæ are gradually (not abruptly, as in *H. armata*) thickened towards their extremities, and ciliated with very short hairs on the inner sides of the thickened parts; the posterior tibiæ are slightly curved inwards, ciliated along the whole of their external surfaces with a row of hairs of moderate and even lengths; and have on their inner sides some long hairs in the middle, and others which become shorter towards each extremity; the wings are slightly fuscous. It is not uncommon.

H. SOCIELLA, Zett.

This is a well-marked species, of about the same size as the last. The thorax has a grey tinge, the shoulders being whitish; the abdomen is ash-grey, marked by a narrow black sub-interrupted dorsal stripe, with very indistinct or no angular dilatations; the intermediate legs have the femora ciliated with long hairs of even lengths along their posterior surfaces, and are furnished with a long row of spines on their under sides; the middle tibiæ have yellow bases, are very slightly thickened towards their extremities, and ciliated with soft short hairs along the whole length of their inner surfaces; the posterior tibiæ are simple, having no bristles or long hairs on their sides, with the exception of the two or three usual spines on their outer surfaces. A rare species. I only possess a single male, captured near Bicester, Oxon.

H. SERENA, Fall.

This is a small species, only from 1½ to 2 lines in length; the calyptra are at the base ; it is marked by the usual angular stripe (as in *H. scalaris*) ; the legs are often piceous ; the middle femora are ciliated beneath with long hairs, the middle tibiæ are thickened along their lower halves, and ciliated nearly the whole length of their inner sides, the hairs becoming longer towards the apices ; the posterior tibiæ have a few long hairs of irregular lengths on their outer sides, and only the usual short adpressed ones on their inner surfaces ; the poisers and scales are sometimes fuscous. Not very common.

H. FLORICOLA, Meig.

This species may be readily known by its brownish wings, and widish, straight, interrupted dorsal band on the abdomen, having no angular dilatations. The tibiæ, especially the posterior ones, are piceous or sub-rufous ; and there are six strong projecting spines on the infra-thoracic surface, one arising from the base of each coxa. Not uncommon.

H. CARBONARIA, Rond.

This little black species is well marked, and generally distributed ; the calyptra are small, and, with the halteres, black ; the wings are fuscous ; the abdomen is short and wide, flattened, and marked with the usual angulated dorsal stripe ; the middle tibiæ are thickened towards their ends, which are shortly ciliated on the inner sides ; the posterior tibiæ are unarmed ; there is a minute black spur or tooth-like process on the under-side of each middle metatarsus at its base ; a similar but larger process is found in the same situation in *H. armata* ; on close inspection with a good lens, this is apparently formed by a pencil of rigid black hairs. I believe this species to be identical with the *A. ærea* of Meigen, but not with that of Zetterstedt ; the latter is considered by Loew to be the same as the *A. gibbera* of Meigen, and to belong to the genus *Azelia*.

(*To be continued*).

MEASUREMENTS IN DESCRIPTIVE ENTOMOLOGY ; A SUGGESTION.

BY R. McLACHLAN, F.R.S., &c.

The following remarks *now* almost exclusively concern British entomologists. Very few years ago they might have been applied far more universally. The substance of them amounts to a suggestion that *millimètres*, and not *inches and lines*, nor *inches and fractions*, should be used in all descriptions ; in effect the decimal system should be accepted.

At the present moment, there may be considered to be no existing "custom" amongst British entomologists, but many of them have anticipated my suggestion by rendering it inapplicable to themselves. In the volume of "Transactions" of the Entomological Society of London for 1881, I find "descriptive" papers from the pens of sixteen authors, ten of whom use "inches" or "lines" (or fractions), while six use "millimètres." And more than the "thin end of the wedge" has been inserted, for it was only quite recently that "millimètres" were used at all, excepting in quotations.

Carrying my analysis *outside* the entomological publications of this country, I scarcely find (excepting in some issued in the British Colonies) any system of measurement employed other than by millimètres.

The old descriptive authors (commencing with Linné) did not, as a rule, think it necessary to indicate any dimensions other than comparative, thus arguing that their readers should possess at least *as much* knowledge as they. Later, a system of measurement by "inches" and "lines" was instituted, and outside this country this was usually based upon the "Paris inch" (*cf.* Burmeister's "Manual," English translation, p. 26), but not universally, for there were "inches" other than Parisian (excluding our own). The "Paris inch" (which was divided into 12 "lines," as is our own) equalled about 1⅛th English (*i. e.*, about 1 inch, 1½ lines), and, occasionally, the "Paris inch" and decimals were employed. Until quite recently (as already demonstrated), English authors used the English inch and lines (or fractions) exclusively. When we consider that the old "Paris inch" equalled about 28 millimètres, and that the English inch measures slightly over 25 millimètres, it is easy to imagine that much confusion and error resulted from this employment of a term which had such a striking discrepancy in its possible interpretation according to the nationality of the describer. This discrepancy may appear small to the general travelling public whose ideas have been "enlarged" when trying to equalize an English and German "mile," but it seriously affects entomologists who occupy themselves with the study of minute insects, or of the comparative lengths of the parts of an insect. The use of the English "inch" is liable to more than double the chance of error than if millimètres had been employed to give effect to the author's meaning. (Occasionally, authors have used centimètres and millimètres, or fractions of a centimètre, the latter course being especially objectionable).

Measurement by lines (whether "Parisian" or English) fails in minute insects. It is not, therefore, necessary to enlarge on the custom universal with investigators of minute forms of animal (or vegetable) life, to whom the microscope (with powerful objectives) and micrometer are absolute necessities; these use the decimal system; no other would avail. With these it is often necessary to carry the decimal system to extreme minuteness; for all practical

To conclude. The "descriptive entomologists" of Britain (and her Colonies) are now nearly equally divided between those who use the English inch (and divisions) and those who employ millimètres. Those who still adhere to the former system of measurement isolate themselves from (and occasion unnecessary trouble to) their brethren of nearly all other nationalities. In addition to this they sometimes inadvertently introduce an item of uncertainty into their descriptions which might be reduced to a practical minimum by the employment of *millimètres*. When Teuton, Gaul, Sclav, and "our American Cousin," are approximately agreed on a certain course as best suited to the advancement of science, we "Britishers" should not be divided as to its importance.

Lewisham, London: *9th January*, 1882.

AN ANNOUNCEMENT OF NEW GENERA OF THE *EPHEMERIDÆ*.

BY THE REV. A. E. EATON, M.A.

(*Supplementary from p.* 27).

Amongst specimens of foreign *Ephemeridæ*, very kindly lent me by Dr. Hagen, are represented the following new genera:

HAGENULUS, *n. g.*

Allied to *Adenophlebia* (Ent. Mo. Mag., xvii, 194), but differing as follows:—Hind-leg scarcely longer than the intermediate-leg, their ungues dissimilar in form and size; fore tibia of ♂ about twice and a half as long as the femur. The first axillary nervure of the fore-wing, instead of the anal nervure, receives the extra longitudinal nervures interpolated between them. Hind-wing with a large unciform costal projection, and with very simple neuration. Egg-valve about as long as the last three abdominal segments taken together, narrowed from its base to about its middle, and from thence to its apex, forming a split tube, through which the eggs are discharged; ventral membraneous projection of the ♀ penultimate segment acutely excised and bifid. Type, *H. caligatus*, (in *Potamanthus*), Hag., MS., from Cuba.

Hagenulus caligatus, *n. sp.*
Potamanthus caligatus (Hag., MS.).

Sub-imago dried. ♂. Wings transparent pale bistre-grey: neuration slightly opaque, some of the cross-veinlets in the first three areas of the fore-wing marked with black, most of the others in the disc of the wing faintly bordered with greyish; in ♂ seven cross-veinlets in the marginal area before the nodal point. Setæ annulated with black.

Imago [in life, has olive-brown oculi, light brown ochreous body, with a small black or brown spot on each side of every abdominal segment, &c.: teste Gundlach, Hag., MS.], ♀, dried. Thorax above, luteo-fuscous; abdomen discoloured, the segments darker posteriorly, the venter paler than the dorsum. Wings transparent, the marginal area of the fore-wing slightly discoloured, and containing about seven simple cross-veinlets before, and eleven beyond, the nodal point: neuration piceous, nearly every cross-veinlet marked with a roundish blackened spot. Legs dull pale brownish-yellow, each with the femur twice banded with piceous, the distal extremity of the tibia black, and the tarsus sub-lutescent [" with darker tip to the tarsus," Gundl., MS.]. Setæ white, or greyish-white, with black annulations and joinings; the annulations towards the base of the setæ at every joint, then at every alternate joint, and, still further from the base, at every third joint. Long. corp., 5·—7·5; al., 7·5—8·; setæ circiter, 10 mm.

Hab.: Rangel Mountains, Cuba, in June (Poëy, Chas. Wright and Gundlach; Hag. Mus.). There is no ♂ im. in the collection, but only a sub-imago with seven cross veinlets in the marginal area of the fore-wing before the nodal point; but there are four ♂ im. of, perhaps, another species which have none there, and only nine in the pterostigmatic space. Their thorax seems to be piceous, and their wings are spotless.

TELOGANODES, *n. g.*

Allied to *Ephemerella*, having the anal nervure of the fore-wing similarly approximated to the 1st axillary nervure towards the wing-roots (*vide* Trans. Ent. Soc. Lond., 1871, pl. ii, 5), but differing, as follows:—Hind-wing obovate-oblong, sub-similar in outline to that of *Habrophlebia* (*vide op. cit.*, pl. v, 2), but more obtuse: neuration extremely simple, comprising three longitudinal nervures, viz.: a strong sub-costa terminating near the extremity of the costal projection, followed by a forked and a simple nervure comparable with the 2nd and 3rd nervures in the hind-wing of *Bætis pumilus* (*op. cit.*, pl. v, 25*a*). Two caudal setæ. Type, *T. tristis*, (in *Cloë*), Hag. Distrib., Ceylon.

LEPTOHYPHES, *n. g.*

Allied to *Tricorythus*, but differing as follows:—Caudal setæ, 2. Wings with more numerous cross-veinlets in the disc (none in the marginal area), and having the recurrent membrane produced (as in *Oligoneuria*, &c.) into a short, free, subulate prolongation at the peak of the mesonotum; the terminal and inner margins, perhaps, fringeless.

Leptohyphes eximius, n. sp.

Adult ♀ dried. Body discoloured, pitch-black. Wings transparent, talcose, or slightly dimmed with very pale sepia-greyish; neuration pitch-brown. Fore-legs greyish-black; hinder femora greyish-black, hinder tibiæ and tarsi greyish-white. Setæ dull whitish. Long. corp. (shrunken), 4; al., 8, setæ circiter, 8 mm.

Notes on Lepidoptera in Roxburghshire in 1881.—I have made a few notes on some species of *Lepidoptera* which I have taken, and larvæ I have reared to pupæ, this summer, which may be of some interest to record. During the months of June and July there were extraordinary numbers of the common *Noctuæ*, the sugared trees on some nights being perfectly covered with them; the species in greatest force being *Apamea basilinea*, *Xylophasia rurea*, *Hadena thalassina* and *adusta*, *Noctua c-nigrum*, and many others. The autumn, however, owing to continued cold and wet, has been very unproductive, and many species commonly seen have been meagrely represented, and of others I have scarcely seen a specimen. I may mention that any of the species I have to note of which I had any doubt as to identity have been seen (including all four specimens of *Triphæna subsequa*) and confirmed by Mr. C. G. Barrett, and so may be relied upon. I have seen little of the group of *Sphingina*, and can only note two species, viz.: a fine, newly-emerged specimen of the common *Smerinthus populi*, found clinging to a flower-stem in June; and, on August 24th, a friend sent to me a fine, large, live specimen of *Sphinx convolvuli*, which he found clinging to the outside sash of a window—it is a very large specimen, measuring five inches across the wings, when set out in the usual English fashion. The larva of *Smerinthus populi* is very common on every species of *Salix* and *Populus* in this district, and I have reared a rather large number successfully. Of the *Notodontidæ* I have succeeded with the following, viz.: *Cerura furcula*, which seems scarce; *Notodonta ziczac* and *dromedarius* are both moderately common (I have twenty-eight pupæ of the latter, and about as many of the former) and generally distributed. I may mention that I found one larva of *dromedarius* on alder almost saffron-yellow in colour, and it remains to be seen whether or not the imago will show any variation from the usual type. *Leiocampa dictæa* is pretty common on poplar, but *dictæoides* is a scarce species; I got a few of the larvæ on birch, all of which pupated successfully; in colour they were of a uniform, purple, shining brown, the raised lateral yellow lines being broad and very conspicuous. *Lophopteryx camelina* is plentiful on sallow, oak, and birch, the two former apparently being preferred. I also took larvæ of *Clostera reclusa*, which seems very scarce. I got a number of the larvæ of *Bombyx quercus*, *var. callunæ* on heath, and was successful with them, having fourteen cocoons from eighteen larvæ. In the imago state, I took *Cilix spinula*, in fine condition, in July. Of *Noctuæ*, *Thyatira batis*, not seen previously here, and a number of fine specimens of *Acronycta ligustri*. *Leucania lithargyria* and *comma* were both moderately common, and *Nonagria fulva* plentiful, in September. Of the genus *Triphæna*, I took four specimens of *subsequa* in July, also a fine specimen of *fimbria* in August, and another in September. *Noctua augur*, although not considered a scarce species, appears to be so here, as I only took one good specimen. *Noctua c-nigrum* was plentiful throughout June and July; *triangulum* is scarce, and I secured two good specimens only, and one or two others in worn condition; *brunnea* and *rubi* are both common. Of the *Tæniocampæ* I took two specimens of *gracilis*, on sallow bloom, in the beginning of May, and several good specimens of *Aplecta herbida*, from sugared trees, in June and July, and in the former month a fine specimen of *Hadena rectilinea*. *Anarta myrtilli* was unusually plentiful. I took of the *Plusiidæ* only one notable species, viz.: *Plusia festucæ*, on July 13th, which seems very early for its appearance. Of Geo-

metræ I got, in September, three specimens of *Ennomos tiliaria*, and one of *Himera pennaria*; and, in July, several fine specimens of *Venusia cambrica; Macaria liturata* was moderately common in the fir-woods, and the males of *Fidonia piniaria* were in great force, the female not so easily found, although I secured several. I took *Scodiona belgiaria*, on moorland, in fine condition, in June. *Anisopteryx æscularia* and *Larentia multistrigaria* were not common, although I got of each several good specimens. Of the *Eupitheciæ*, among others, *subfulvata* and *absynthiata;* and the following *Micro-Lepidoptera*, viz.: *Simaëthis pariana*, *Eudorea cratægalis*, *Tortrix Forsterana*, *Peronea variegana*, *mixtana*, and *ferrugana*, *Teras caudana*, *Sciaphila virgaureana*, *Phoxopteryx unguicella* and *myrtillana*, *Eupœcilia angustana* and *ciliella*, *Depressaria nervosa*, *Cerostoma vittella*, *Plutella Dalella*, *Tinea semifulvella* and *cloacella*, *Swammerdamia comptella*, *Chauliodus chærophyllellus*, *Nemophora Schwarziella*, *Gracilaria Swederella*, and *Elachista apicipunctella*.—A. Elliot, Samieston, Jedburgh, N.B.: *November 23rd*, 1881.

[Mr. Elliot asks me to add to his communication a few words on several interesting species, which he has not mentioned:—*Hepialus velleda*, *var. carnus*, one very beautiful specimen. *Oporabia autumnaria*, several fine and well-marked specimens, with fore-wings certainly more triangular than those of *O. dilutata* or *filigrammaria*; these I understand were taken on a heath, higher than the locality in which Mr. Elliot found *filigrammaria* among sallow. *Cheimatobia boreata*, very fine specimens, having the marginal black dots distinctly shown on fore- and hind-wings. I may also mention that the four *Triphæna subsequa*, taken in Roxburghshire, have very much darker fore-wings than any I have before seen. They contrast handsomely with Suffolk specimens.—Chas. G. Barrett.]

Scarcity of Colias Edusa in 1881.—This does not appear to have been a "year" for this species, if one may judge from the absence of notices of captures in the Entomological periodicals; nor was it plentiful last year, or the year before. I have seen but one example myself this season, and that a large and very brightly coloured female which I captured at Penzance, while she was depositing eggs on some *Lotus* plants. She was at once placed in a breeding cage, with a growing plant of *Lotus*, and furnished with a piece of sponge moistened in syrup, and in about a fortnight's time laid some 150 eggs. A few of these were sent to my friend Mr. G. C. Bignell, of Plymouth, and the remainder, in due course, hatched. The young larvæ grew very well, and looked in a most satisfactory condition until just attaining their last moult, when nearly all of them sickened, turned black, and perished, and only about a dozen of them assumed the pupa state, and these also, in a short time, turned black and shrivelled up, although the wing cases of a few of them became of a bright yellow, showing that the perfect insect was fully developed and ready to emerge. I account for my failure in bringing these larvæ to maturity to want of sufficient sun, and the abundance of rain, during the whole time they were feeding, for they were kept quite exposed in my garden, and often for days at a time their food plants were saturated with moisture. Mr. Bignell fared no better

Smerinthus populi and Notodonta dictæa double-brooded.—Notwithstanding the unusually cold wet season—for, with the exception of a few weeks at the end of June and beginning of July we had, in the North of Devon, very little of what could be called real warm summer weather—these species were double-brooded. Larvæ of the former were observed the middle of July, and again up to the second week in October, and this latter brood were nearly all the beautiful golden-green variety with sub-dorsal row of large red spots, rarely to be seen among the first brood. Larva of *N. dictæa* also occurred the end of July, and were taken again, quite small, on 3rd October, so that most of this brood must have perished, for the easterly and westerly gales of the middle of the month completely blackened and killed the few fresh leaves then remaining.—Id.

Nepticula agrimoniæ, Heyden, a species new to Britain.—In October and November, 1879, when searching for larvæ of *Nepticula æneofasciella* in one of our large Sussex Woodlands, I had the good luck to find in the leaflets of *Agrimonia eupatoria* the larvæ of a second species, which pupated in their mines and yielded the above *Nepticula* in the following spring. The larvæ are locally very plentiful, and 20—40 may often be found in a single leaf. They seem to prefer the radical and lower cauline leaves of those plants which are well sheltered by brambles, &c. Not being able to find any empty mines, I infer that there is only one brood in a year. I cannot end this note without thanking Mr. Stainton for kindly naming some specimens for me, and for referring me to the accounts of this species in the Entomologists' Annual (1868, p. 47 and 1874, p. 46) which I had overlooked.—W. H. Ballett Fletcher, 6, The Steyne, Worthing, Sussex: *January*, 1882.

[Von Heinemann remarks (Wiener entom. Monatschrift, 1862, p. 312), "that this species is readily distinguished from its allies by the form of the anterior wings, which appear of unusual breadth beyond the middle, by the longer cilia," so that from the costa to the anal angle is a greater distance than usual in this group. The male, as remarked by Von Heinemann, has the anterior wings "more grey than black." The general appearance is, however, much that of *Nep. angulifasciella*. The habit of pupating within the mine is, however, one that does not occur amongst any of the allied species, and a good character is thereby at once afforded. Von Heyden's notice in the Stettin. entom. Zeitung for 1861, gives the earliest mame for this insect, *Nepticula agrimoniæ*.—H. T. S.]

Re-discovery of Anerastia Farrella.—In July last, I paid a visit one afternoon to some sand-hills on the northern coast of Norfolk, and after boxing several species, such as *Agrotis valligera* and *tritici*, *Crambus inquinatellus* and *Warringtonellus*, and *Anerastia lotella*, which were dislodged from the grass and other herbage growing there, I took seven specimens of a Lepidopteron somewhat resembling, as I then thought, *Anerastia lotella*, but smaller and more conspicuously marked. This, upon arriving home, I pronounced to be *A. Farrella*, but noting the rarity of the species I sent one a short time afterwards to Mr. C. G. Barrett, who has informed me that I had named the insect correctly. In the Norfolk list of *Lepidoptera*, compiled by Mr. Barrett and issued in 1874, is a remark on *A. Farrella* which I cannot do better

than quote here. "The original specimens of this species were taken by a Mr. Farr, who collected in Norfolk about 30 years ago. He went to London about 1844 and afterwards died; it is, therefore, impossible now to ascertain the exact locality of the specimens, but they appear to have been taken either near Yarmouth or Lowestoft. Probably the species is to be found on the sands of the Norfolk and Suffolk coasts."—EDWARD A. ATMORE, 8, Union Street, King's Lynn: *December 13th*, 1881.

***Eulepia grammica*.—This day I have had a pleasure I never expected, viz.: to pin in my cabinet a veritable British specimen of *E. grammica*. About two months ago I went over to Keighley in Yorkshire to see an old man that T. H. Allis used to call upon; his name is Jesse Miller, one of the older type of collectors, that collected for love, and unless Labrey or Allis called he had no correspondents, still less with any dealers. Well, Allis tried hard to get the *E. grammica*, but Jesse kept the moth. I asked him who took it, and he said that John Armstrong took it about 46 years ago, in Wharfedale, when shaking the boughs of trees for caterpillars. I now copy from his letter to-day—"you need have no fear of its being British, it is the only one of the kind I ever saw." I may add, the specimen is old and perfect but badly set, and much smaller and duller looking than any foreign specimens I have seen; it is a male.—J. B. HODGKINSON, 15, Spring Bank, Preston: *Jan. 4th*, 1882.**

***Mimæseoptilus Hodgkinsoni versus Loewii*.—I see my "plume" is threatened with extinction. Has any one seen the original *Hodgkinsoni* that I took? I fancy C. S. Gregson could give a good account of it, he has a good drawing of it and I rather think a specimen;** the late Henry Doubleday wrote to me that I had sent him a new plume and a new *Tortrix*, the "plume" was *Hodgkinsoni*, the *Tortrix*, *Euchromia rufana*. A little more information may not be out of place. I never either saw or heard tell of a *Loewii* being taken any nearer than Southport, quite 50 miles away and a sea between; another thing the plant Centaury does not occur within miles of where I took this insect.—ID.

Amblyptilia punctidactyla.—This plume I took some years ago in the autumn, in the Clee Hill district of Shropshire, on the wing, and bred two specimens from larvæ sent me by a friend, found in the same locality, but a different part of it. The larvæ were feeding on *Stachys sylvatica*, and the pupa remained suspended to the spike on which the larva had fed; on finding, subsequently, in this county, larvæ that appeared precisely similar feeding on the same plant, and eventually suspending themselves in the same way, I hoped that I had reared a good series of the same plume, but they all, without exception, turned out to be *A. acanthodactyla*. The larvæ and pupæ were so similar that the characteristic difference must be very slight: both were green, with a slight purplish tinge in some, both slightly hairy. My friend has since taken and reared larvæ from the same plant in Dorsetshire, which have produced *punctidactyla*. From this, I judge that *A. punctidactyla* is often overlooked, and mistaken for *acanthodactyla*, and that it is worth while in the common in this county, but I have never yet seen the other species here.—H. WILLIAMS, Croxton, Norfolk: *January*, 1882.

[We learn from Professor Frey's remarks, Stettin. ent. Zeitung, 1871, p. 125, that he had also bred both these plumes from *Stachys sylvatica*, but those he referred to *cosmodactyla* differed somewhat from the ordinary form of that species, such as he had been in the habit of breeding from the seeds of columbine (*Aquilegia vulgaris*). However, he could only look upon these specimens as being a variety of *cosmodactyla*, having once bred one similar specimen from columbine, amongst a hundred of the ordinary insect.

As the fifteen bred from *Stachys sylvatica* were all precisely similar, he suggested that they might bear the name of *cosmodactyla, var. stachydalis.* The *punctidactyla* of the Manual is the *cosmodactyla* of Frey and Staudinger.—H. T. S.]

Oxytelus fulvipes in Warwickshire.—Whilst searching to-day for *Ocyusa picina* and *Gymnusa variegata* (both of which species I obtained) in some boggy ground at Sutton Park, near here, I found several specimens of *Oxytelus fulvipes*, a species hitherto found only (in this country), I believe, in Needwood Forest.—W. G. BLATCH, 214, Green Lane, Smallheath, near Birmingham: *January 18th*, 1882.

Influence of size of elytra on flight in beetles.—In last November's Magazine, p. 138, are some notes of mine on the influence of air-currents on *Coleoptera*, and into these notes the Editors have introduced the following paragraph:—"It would, however, be difficult to base any general theory upon these facts, as so many mountain species have very abbreviated elytra and no wings at all, and such wet-loving sluggish creatures as *Acrognatha* have short elytra utterly disproportionate to the length of their body."

Now I should class *Acrognatha* with the *Bledii* and *Trogophlæi* mentioned in my note, for it has ample wings and on still evenings doubtless flies. But had it ample elytra the least breeze or air-current would waft it away from the subaquatic areas essential for it. I do not know to what genera the "many mountain species" with abbreviated elytra and no wings belong. Yet I can imagine species in which the shortened wing case, owing to a perpetually disturbed atmosphere, would be insufficient to enable them to retain their location, and in this case they might either die out or become apterous. It is possible even that a further modification would occur, viz.: the elytra might become soldered together as an insect ceases to raise them. Mr. Wollaston many years since referred the apterous forms of *Coleoptera*, so abundant in Maderia, to the strong breezes continually passing over that group of Islands, and what I believe is that the shortened wing cases of *Coleoptera* is a protection in a less disturbed atmosphere, namely, in the ordinary air-currents of temperate latitudes. For the past two weeks I have been noticing the flight of *Coleoptera* here, and comparing the movements of insects with those of Japan. In beating for specimens you knock numbers into the umbrella, but the difficulty is to secure them. Ordinary beetles, such as *Hispa*, *Languria*, and *Opilus* which are sluggish species in Japan, here often escape by flight before you can put a finger on them, and this activity I believe can be referred to the calm and generally currentless atmosphere of the tropics, which enables species with ample elytra to acquire a rapid and energetic flight without being involuntarily carried away from their food-plants, or the situations suited for their habits. Now if there is truth in these latter remarks, *Brachelytra* should be much rarer in the stillness of the tropics than in the more disturbed atmospheres of the temperate regions, and I think my collections here will prove this.—G. Lewis, Hadley, Dickoya, Ceylon: *12th December*, 1881.

Capture of Cassida vittata near Hastings.—During last summer I captured this species along the road from Battle to Robertsbridge, and I thought it might be worth recording in your Magazine.—F. W. Savage, University School, Hastings: *January*, 1882.

More Tropical Notes.—I have read Mr. W. B. Pryer's "Tropical Notes" (Ent. Mo. Mag., vol. xvii, p. 241) with great interest, and though I agree with him that on the whole the accounts of the fauna and flora of the Tropics are greatly exaggerated by travellers, still my experience in the Western Tropics, in Chiriqui and other parts of central America, differ greatly from those of Mr. Pryer in the East; I do not find such an absence of life even in the dense forest, nor can I say that butterflies in particular are never found under the forest canopy. Mr. Pryer (who tells us very little about the *Coleoptera*) gives a somewhat dismal account of the productions of the forest which will certainly not apply to this part of the New World. The forests of the tierra caliente of Central America are perhaps more open than in Borneo, lofty trees with dense undergrowth of palms, tree ferns, &c., and though beautiful flowers are few and far between, still the foliage-plants in a great measure compensate for their absence. I seldom enter the forest without meeting with a flock or two of one or more species of monkeys, macaws, and other brightly coloured birds, two species of *Morpho*, two of *Caligo*, many *Heliconidæ* (the beautiful transparent winged *Ithomiæ* especially), species of *Satyridæ* that I never find excepting beneath the forest canopy, various *Erycinidæ*, &c.; it is true that more species of butterflies will be found outside the virgin forest, in the second growth and along the banks of the rivers, &c., as the *Papilionidæ*, *Pieridæ*, *Hesperidæ*, species of *Anartia*, *Junonia*, *Danais*, *Agraulis*, *Callicore*, &c., these are rarely if ever to be seen in the forest. *Coleoptera*, however, are very rare comparatively in the forests of the hot country, the coffee-regions or zone of 2000—3000 ft. or more elevation is infinitely more productive; I find at least double the number of species and individuals in those districts, and the new clearings made in the forests for planting coffee are the most productive places, here *Coleoptera* (especially small species) abound, many species of *Lebiidæ*, *Lampyridæ*, *Lycidæ*, *Longicorns*, *Chrysomelidæ*, *Hispidæ*, &c. *Hemiptera*, especially the *Pentatomidæ*, *Coreidæ*, and *Fulgoridæ* are perhaps commoner in the forests of the hot country. Though one does not find in this Western Tropical forest all the gaily coloured birds, insects, &c. at once, still they are there, and, in a residence of a few months, one becomes acquainted with them. I confess myself I was greatly disappointed with my first impression of the Tropical Forest, but, after a long residence, my opinion has greatly changed, and I can confirm Mr. Pryer's eastern experiences in one thing only, that

Review.

LES CYNIPIDES, 1re partie.—La génération alternante chez les Cynipides par Dr. H. Adler, de Schleswig, traduit et annoté par J. Lichtenstein (de Montpellier): suivi de la Classification des Cynipides d'après le Dr. G. Mayr, de Vienne. Montpellier; C. Coulet: Paris; J. B. Baillière et fils: Bordeaux; Feret et fils: Berlin; R. Friedländer et fils. 1881: pp. i—xv and 1—141: 8vo, with 2 coloured plates.

Dr. Adler's well-known theory of the alternation of generation in *Cynipidæ* is of extreme interest to all scientific entomologists, but the treatise in the German language in which it was propounded (*cf.* Ent. Mo. Mag., xvii, p. 259), is not in many hands in this country, and this translation of it into French by M. Lichtenstein will prove to be a real boon to students in England as well as in France, and will doubtless conduce to extended observation and experiment. The translation has been made with the sanction of Dr. Adler, who has also aided in its production by giving the original large folded coloured plates, without which, as Lichtenstein says, it would have been difficult to comprehend some points. In the "Introduction" (from which an extract will be given) M. Lichtenstein avows his adhesion to Dr. Adler's theory, and interprets the facts observed as being in accordance with his own ideas of the biology of *Aphides*, which have frequently been adverted to in this Magazine.

Part 2 of the work is to contain a description of new species found in the South of France.

Obituary.

Professor C. G. A. Giebel, the successor to Burmeister in the direction of the Museum, and professorship, at Halle, died on the 15th November last. He was born at Quedlinburg, 13th September, 1820. His writings were very versatile, but probably he was best known as a palæontologist, and many papers on fossil insects were written by him. Outside palæontology he published much on the Bird-Lice (*Mallophaga*) which he made his speciality, and in 1874 he produced an enormous folio work, with 20 coloured plates, on these creatures, under the title "Insecta Epizoa," which, to a great extent, should be regarded (as the title-page indicated) as a posthumous work by Nitzsch, edited by Giebel, but with very much original matter by the latter. In journalism he was known as the chief editor, for many years, of the "Zeitschrift für die gesammten Naturwissenschaften," which holds a respectable position amongst Natural History journals in Germany.

Jules Putzeys. We regret to announce the death, at Brussels, on the 2nd of January, of this prominent Coleopterist, in the 73rd year of his age. Putzeys held high official government appointments in Belgium, and at his death was general honorary secretary to the Minister of Justice, in addition to other honours, not the least of which was that of "Trustee" of the Belgian Museum of Natural History. He was especially a Carabologist, and his first published entomological paper related to this group, and appeared in the Stettin Zeitung for 1845, and that journal contains many of his somewhat voluminous writings, almost down to date, though he also published much through the various channels for such memoirs in Belgium. His death, following so soon on that of Baron Chaudoir, leaves a great gap in the students of this special branch in Europe. We have reason to believe that his collections have been bequeathed to the Belgian National Museum, the already extensive riches of which they will greatly swell. In him Belgium has lost one of her most highly honoured and respected naturalists.

North Middlesex Natural History Association.—We hear that under the above name a new Natural History Society has been established at Holloway (temporary address, 26, Ingleby Road, Grove Road), to which we wish every success. The Annual Subscription is Half-a-Guinea. The Meetings are held every Tuesday, at 8 p.m.—Eds.

The "Rivista Scientifico-Industriale e Giornale del Naturalista."—The old-established Italian Magazine indicated in the first half of the above title, now appears in an enlarged form with a strong natural history direction, under the editorship of Prof. Guido Vimercati, Treasurer of the Italian Entomological Society, with whom (amongst others) are associated the following names known to Entomologists, viz.:—P. Bargagli, G. Cavanna, G. Malfatti, and P. Stefanelli. It appears twice monthly, and the subscription (outside Italy) is 12 francs (address, G. Vimercati, 1, Piazza Cavalleggieri, Florence). "All original notes possessing general interest will be published in three foreign languages, English, French, and German." We are rather sorry to notice that a lottery (prizes of books, apparatus, or collections) is offered as an inducement to subscribers.—Eds.

ENTOMOLOGICAL SOCIETY OF LONDON: Anniversary Meeting, *January* 18*th*, 1882.—H. T. STAINTON, Esq., F.R.S., &c., President, in the Chair.

The following were elected Members of Council for the ensuing year, viz.:—W. Cole, E. A. Fitch, F.L.S., W. A. Forbes, B.A., F.L.S., F. Du Cane Godman, F.L.S., Rev. H. S. Gorham, F. Grut, F.L.S., W. F. Kirby, F. P. Pascoe, F.L.S., O. Salvin, M.A., F.R.S., E. Saunders, F.L.S., H. T. Stainton, F.R.S., Lord Walsingham, M.A., F.Z.S., and C. O. Waterhouse.

The following Officers were subsequently elected, viz:—President, H. T. Stainton; Treasurer, E. Saunders; Librarian, F. Grut; Secretaries, E. A. Fitch and W. F. Kirby.

The President read an address which was ordered to be printed, and the

A FEW WORDS ABOUT *EPISCHNIA (ANERASTIA) FARRELLA.*

BY H. T. STAINTON, F.R.S.

In my "Attempt at a systematic catalogue of the British Tineidæ and Pterophoridæ," published in 1849, the following note occurs (at p. 4) after the synonymy of *Anerastia lotella:*

> "Mr. Doubleday and Mr. Curtis have each a specimen apparently distinct from this, with a pure white streak from the base to the apex near the costa, the costa itself beyond the middle being dark. They were taken at the lighthouse at Lowestoft."

The following year, 1850, John Curtis published in the Annals and Magazine of Natural History (second series, vol. v, pp. 110—121) some "Notes upon the smaller British Moths, with descriptions of some nondescript or imperfectly characterized species." Amongst these notes there appears (at p. 114) a description of *Anerastia Farrella.*

Mr. Curtis adds, "For a specimen of this pretty and distinct species I am indebted to Mr. H. F. Farr: two or three were taken at the North Lighthouse, Lowestoft, the beginning of June, 1840."

In 1851, appeared my "Supplementary Catalogue of the British Tineidæ and Pterophoridæ," in which (at p. 1) *Anerastia Farrella* is introduced, with a reference to the Curtisian description and to the note in my previous Catalogue, and there is added:

"This species has also occurred on the coast near Deal."

Fourteen years elapsed before any further notice of this species appeared, when A. Constant described it under the name of *Myelois Lafauryella*, from a single female, which he had taken in the sandy department of Landes, during an excursion he had made there in company with Mons. Lafaury; this description is in the Annales de la Société Entomologique de France, 1865, p. 189, and is accompanied by a figure of the insect, pl. 7, f. 1.

Four years later we learn that this insect, which had been found on the sandy coasts of Norfolk, Kent, and Western France, was also no rarity on the shores of the Baltic; for in the Stettin. entom. Zeit., for 1869 (p. 289), Baron von Nolcken wrote as follows:—

> "Near Stettin there occurs an *Epischnia*, which the Lepidopterists there have collected in numbers, and have distributed under the name of *Lafauryella*. Lately Dr. Schleich wrote to me that Herr Miller had likewise discovered the larvæ in the flowers of *Anthyllis vulneraria;* probably in a short time we shall now learn the entire natural history of this species. The name of *Lafauryella* was, as they told me at Stettin, given to it by Constant, but I have neglected to ascertain where he described it—but it has another and probably older name, which seems to be quite

unknown on the Continent, though given to it by Curtis in 1850, as pointed out to me by Mr. Stainton when I showed him specimens of the Stettin species. Curtis described it in 1850 as *Farrella* in Ann. and Mag. Nat. Hist., 2nd Series, v, p. 114, and Stainton places it in his Supp. Cat. of Tineidæ, 1851 (p. 1). I mention these references in order that when the now imminent discovery of its entire natural history comes to be published they may be duly utilized."

In Kaltenbach's "Pflanzenfeinde aus der Klasse der Insecten" (of which the first portion appeared in 1872), we read (at p. 119), under *Anthyllis*:

> "*Epischnia Lafauryella*, Const.—Herr Miller discovered the larva of this species in the flowers of *Anthyllis vulneraria*, in 1869."

In the same year, 1872, Zeller in his "Beiträge zur Kenntniss der nordamerikanischen Nachtfalter," which appeared in the "Verhandlungen der zoologisch-botanischen Gesellschaft in Wien," has noticed of *Epischnia Farrella* (p. 558), of which he records the occurrence of a specimen in North America (at Beverly in Massachusetts) that

> "This species which appears to occur on all the Northern Coasts of Central Europe, is found on the coast of Pomerania on *Anthyllis vulneraria*; the larva is most easily obtained after it has spun up a sand-ball for hibernation by passing the sand through a sieve; in the spring it spins an elongate cocoon, in which it changes to the pupa-state."

In 1880, we find a further notice in the Stettin. entom. Zeit., in a paper on "Pomeranian Micro-Lepidoptera by F. O. Büttner, with additions by Professor Hering and Dr. Schleich," here we read (at pp. 393, 394):

> "*Epischnia Farrella*, Curt. (*Lafauryella*, Const., Ann. Soc. Fr., 1865).—The perfect insect is often abundant from the middle of May to the end of June amongst the sand-hills near Misdroy, a watering place on the Baltic Coast. The larva feeds on *Anthyllis vulneraria*, is full-fed in September, when it descends below the surface of the sand and spins a spherical ball, in which it passes the winter *as larva*. The following spring it quits this hibernaculum and then spins an elongate cocoon, which in captivity is sometimes on the soil, sometimes in the corners of its cage; within this cocoon it assumes the pupa-state in about a fortnight, and in about three weeks the imago appears. In its habits and mode of life it wonderfully resembles the larva of *Gelechia malvella*, Hüb."

It is not quite clear to me whether the *three* weeks begin to count after the pupa-state is assumed, but I should imagine that would most probably be the case.

As to the habits of *Gelechia malvella*, which have been given in

The larvæ of *Gelechia malvella*, which can be collected by hundreds in holly-hock seeds, require to be kept out of doors; they soon enter the earth and there form round habitations in which they pass the winter unchanged; in the spring I saw them crawling about the cage by scores, looking none the worse for a winter's residence underground, and not needing any further nourishment; they soon spun their proper cocoons, chiefly among leaves on the surface of the ground, and the perfect insects came out very freely. Whether the larva of *Epischnia Farrella* also crawls about in the spring is not mentioned, but I should think it extremely probable. Perhaps on this point we may soon obtain further information, and I should also like to hear precisely *how* it treats the plants of *Anthyllis vulneraria* on which it feeds; if by rolling the leaves, by spinning web, &c.

Mountsfield, Lewisham:
February 2nd, 1882.

Anerastia Farrella.—I note that Mr. Edward A. Atmore records the rediscovery of *Anerastia Farrella.* This should scarcely be called a rediscovery, because it has been taken many times since 1844 (the date mentioned as that when Mr. Farr left Norfolk) by Mr. Thomas Brown, of Cambridge. I received several specimens from him about the year 1870, which he found on the sand-hills near Yarmouth, while searching for *Crambus fascelinellus* and *Nyctegretes achatinella.* These specimens are now distributed amongst the principal collections in this country.—E. G. Meek, 56, Brompton Road, S.W.: *February 6th*, 1882.

LIFE HISTORY OF *CALLIDRYAS DRYA*, BOISD.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

This fine butterfly was local in the neighbourhood of Valparaiso, but where its food plant occurred was tolerably plentiful. The males flew rapidly during the heat of the noon-day sun, and, as at that time of the day there was usually a strong breeze blowing, they were extremely difficult to catch, for if struck at and missed, they went off down wind at a headlong pace, and were soon lost to view. The country they frequented was steep and bushy, with large boulders of grey granite scattered on the surface, and in many places intersected by deep fissures, which made it anything but pleasant for an excited chase after such a swift-flying insect. The females were exceedingly scarce in comparison with the males, being in the proportion of about one to twelve, but they were far more easy to catch, as they flew among the branches of their food-plant, searching for a suitable place to deposit their eggs. Strange to say, hardly a specimen captured was perfect, although in many instances they seemed to be fresh from the chrysalis, yet had large pieces chipped in most cases from their hind-wings. This was caused by the males, who, when seeking their mates, were so numerous, that they were often to be seen in a throng fluttering round a single female, and, in their eager struggles, urging her amongst the low and thorny brushwood, where her wings soon became damaged.

The eggs were laid on the under-side of the terminal shoots of *Cassia Candolleana*, Vog.—called by the Chilians the "Flor del Mayo," —upon which shrub the larvæ appear exclusively to feed. When young they live between united leaves, but as soon as they become half-grown, they emerge and feed exposed on the upper surface of the leaves, continuing to do so until full-fed. They can then be seen without much difficulty, stretched at full length along the centre of the leaf, with their claspers firmly fixed to a silken pad. They are not to be dislodged with a beating-stick. The mature larva is of a dark pea-green colour, thickly irrorated with slightly raised black dots, which give it a somewhat rough shagreened appearance; a broad, granulated, lemon-yellow and orange stripe runs just above the spiracles, which are black; on each segment above this yellow stripe are four small, square-shaped black spots; head, pro-legs, claspers, and entire under surface pale pea-green. The whole larva bears a strong resemblance to that of *Gonepteryx rhamni.* I was unable to find a chrysalis among the branches of the *Cassia*, but in confinement, the larva, when full-grown, attached itself to a silken pad, encircled itself with a thread, and, in this position, changed to a bright beautiful green and much-angulated chrysalis, with pale yellow dorsal and spiracular lines, and enormously developed wing-cases. The change from larva to chrysalis was extremely rapid. A full-grown larva which was found on the afternoon of 4th January attached itself the same evening, and, upon looking at it at four o'clock the following afternoon, it had, in that short time, become a chrysalis, which produced a male butterfly on the 21st of the same month, so that the whole period from larva to butterfly was just seventeen days.

The perfect insects differ slightly from the descriptions and figures in Butler's monograph, but, probably, this difference is merely local.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ.*

BY R. H. MEADE.

(*continued from page* 205.)

13. PIEZURA, Rond.

Gen. ch.—Head smooth and semi-circular; eyes large, bare, and sub-contiguous in the male; antennæ long, the third joint about three times the length of the second; arista plumose; alulets of moderate size, with unequal scales; abdomen depressed, with five distinct segments; wings with the veins as in the genus *Homalomyia*; legs simple.

P. PARDALINA, Rond.

This genus contains, as yet, only one recorded species, which bears a strong general resemblance in form and structure to those in the genus *Homalomyia*, but differs by having the arista plumose, and the abdomen with five segments, four only being distinct in the *Homalomyiæ.*

P. pardalina is of a pale yellowish colour, the face is silvery-white; the eyes in the male are bordered, and separated above, by a double white stripe, which extends to the vertex, where a small elongated triangular black spot is interposed, upon which the ocelli are placed; the antennæ are yellow, with the third joint grey, the colour becoming darker towards the end; the thorax is pale slate-grey, and has a wide central longitudinal dark stripe, with two lateral, somewhat semi-lunar, longitudinal spots, one over the base of each wing; the shoulders are yellow; the scutellum is grey at the base, but yellow at the apex; the abdomen is yellow, with a more or less distinct, narrow, interrupted, black dorsal stripe on the last three segments, and a black mark on the margins of the third and fourth segments; the sub-anal male appendages are large, globular, and of a yellow colour; the legs are entirely yellow, with the exception of the tarsi, which are black. Long. ♂, 6 mill.*

I have not seen a female, but Rondani says that it is very similar to the male.

This peculiar species appears to be rare on the continent of Europe, as well as in England. I am not aware that its occurrence has been recorded anywhere except in Italy. I have seen two British specimens; one was captured by myself near Bicester, in Oxfordshire, and the other was found by Mr. C. W. Dale near Oxford.

14. AZELIA, R. Desv.

Atomogaster, Macq.
Anthomyia, p. Meig., Schin.
Aricia, p. Zett.

Gen. ch.—Head round; eyes very large, bare, contiguous in the

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* I gladly accept the suggestion made by Mr. McLachlan in the last number of this Magazine, and for the future will use millimètres instead of lines in the measurement of *Diptera.*

males; ocelli large and prominent; frontal bristles wanting; arista bare, or pubescent; alulets small, but with the scales usually unequal in size; abdomen cylindrico-conical, with only four distinct segments, each of which is mostly marked with three spots, one central and elongated, and two lateral and round; wings veined as in the *Homalomyiæ*, but with the axillary less approximated to the extremity of the anal veins: hind tibiæ of the males often bearded on one or the other side with long hairs.

Females with the eyes separated by a moderately wide space, furnished with a single row of small bristles on each side; abdomen pointed, and marked as in the males, but with smaller spots.

Sect. 1—*Halteres pale.*

1. MACQUARTI, Stæg.
   triquetra, p. Macq.
2. ZETTERSTEDTI, Rond.
   triquetra, Fall. et Zett.
3. CILIPES, Hal.
   triquetra, p. Macq.
   tibialis, Stæg.
   Stægeri, Zett.
4. TRIQUETRA, Wied. et Meig.
   nudipes, Zett.

Sect. 2—*Halteres black.*

5. GIBBERA, Meig.
   ærea, Zett. ?
6. ATERRIMA, Meig.

This group, though closely related to the *Homalomyiæ*, is well characterized, and has been recognised as forming a distinct genus by most modern authors, except Schiner, who, in his most valuable work (Fauna Austriaca, *Diptera*), still retains it in his great and heterogeneous genus *Anthomyia*. It was elaborately monographed by H. Loew in 1874,* and revised by Rondani in 1877.†

The British species in the first section may be thus tabulated:—

Hind tibiæ of ♂ with long hairs on both outer and inner sides...1. MACQUARTI.
" " " on inner sides only ....2. ZETTERSTEDTI.
" " " on outer sides only ....3. CILIPES.
" " " on neither side.................4. TRIQUETRA.

All these four species have the alulets and wings more or less fuscous or nigrescent. *A. Macquarti,* which is the most common, is also usually the largest; besides having long ciliæ on both sides of the hind tibiæ, the males are also furnished with a single long straight bristle in the middle of the under-side of the middle femora. The females sometimes have the fore tibiæ piceous, or even testaceous, and may be specific characters by which they may be distinguished from the females of the allied species. *A. Zetterstedti* has the long ciliæ of the hind tibiæ arranged in a double row on the inner and anterior sides, and has two or three strong bristles on the under-surface of the middle femora. This little species (usually the smallest) is not uncommon. I do not know the female. *A. cilipes* has the beard on the hind tibiæ of the males longer and stronger than in either of the other species, and placed on the outer (or rather hinder) sides only; it has also a single very long bristle projecting straightly outwards a little before the end of the tibia below the beard. The legs are all more or less piceous, the tibiæ being often testaceous. In size it nearly equals *A. Macquarti*, the males being about 5 millimètres in length. It is not common. The female is unknown to me. *A. triquetra* is about the size of *A. Zetterstedti*, or a little larger, the males measuring from 3½ to 4 millimètres in length. It is easily known by its simple hind tibiæ. There is usually one long bristle on the under-side of the middle femora, as in *A. Macquarti*. It is generally distributed. I have not seen the female.

A. GIBBERA, Meig.

This little species, from 2½ to 3 millimètres in length, has black halteres, as well as nigrescent alulets and wings; the thorax is deep black; the abdomen is dark grey, marked in the ordinary manner, but with the spots large and sometimes confluent, when they become indistinct; the scales of the alulets are very small, and almost or quite equal in size; the hind tibiæ are ciliated on the under-side with long hairs arranged in two rows. Very rare. I have only seen one male, captured by Mr. Verrall at Rannoch, which he kindly sent for my inspection.

A. ATERRIMA, Meig.

This is an aberrant species, the abdomen being without the characteristic spots; it resembles the other species in the genus, however, by the form and structure of the head, abdomen, and wings. It is entirely black, with the exception of a narrow white seam on the posterior edge of each abdominal segment; the halteres are quite black, as well as the alulets, the scales of which are small and equal in size; the wings are nigrescent; the legs are black; there is a single straight bristle on the under-side of each middle femur; the hind tibiæ are simple. Size of male about 3 mm. I have seen but one specimen of this little fly, also from the collection of Mr. Verrall.

15. CŒLOMYIA, Hal.

Homalomyia, Rond.

Aricia, p. Zett.

Gen. ch.—Eyes of moderate size, bare, sub-contiguous in male, not covering the lower third of the sides of the head; forehead and epistome rather prominent; proboscis membranous and somewhat elongated; arista tomentose; abdomen with five segments, very depressed, membranaceous beneath, concave, and without plica; alulets small and sub-equal; wings and legs as in the *Homalomyiæ*.

This genus* differs from all the three preceding ones by having the head more or less angular, with smaller eyes and prominent forehead and epistome. The concave membranaceous state of the ventral surface of the abdomen, which looks as if the under halves of the rings had disappeared, is not exclusively confined to this genus, for the same peculiarity may be observed in the *Homalomyiæ*, but the "plica" (a membranous, or vascular ?, cord, with diverging processes, which connects the base with the apex of the abdomen) is always present in the latter genus, while it is very short and almost abortive in *Cœlomyia*.

C. MOLLISSIMA, Hal.
spatulata, Zett.

This, the only known species, is peculiar by having the abdomen of the males of an obovate or spatulate form ;† the wings and alulets are nigrescent ; the halteres yellow ; the thorax black and unstriped ; the abdomen grey, marked with a longitudinal line and three broad transverse marks, which assume a triangular form, being attenuated towards the sides ; the legs are black, the middle femora are thickened in the centre, and furnished beneath with a strong black beard ; the middle tibiæ are narrow at the base, and become gradually larger towards the end, which is ciliated on the inner side with short hairs.

The female has the forehead prominent, the eyes separated by a wide space of a whitish-grey colour, with a black central stripe (often red in front) ; the thorax grey, and rather indistinctly striped ; the abdomen short, oval, and pointed, of an uniform greyish-black colour ; the wings grey, with yellow bases ; the alulets and halteres yellow ; the legs simple.

This peculiar species occurs chiefly in the north of England. I have found both sexes in tolerable abundance in a swampy place in a wood near Bradford, during the month of May, upon the flowers of *Caltha palustris*.

(To be continued).

ALTERNATION OF GENERATION IN THE *CYNIPIDÆ*.

BY J. LICHTENSTEIN.‡

So far as one genus at least is concerned, I am able to uphold the theory of M. Adler. I do this with the greater pleasure, because in it I recognise the laws that I have traced in my preceding works on the "Homoptères monoones," and I am very glad to render deserved homage to the learned compatriot of Fabricius.

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* Haliday's description is given in a note in Westwood's Generic Synopsis at the end of the second volume of his Introduction to the Modern Classification of Insects, p. 143. It is as follows ; "*Cœlomyia.* Abdomen, ♂, obovatum, ventre concavo toto membranaceo (absque plica aut linea coriacea longitudinali). Facies brevis impressa. Peristoma oblongum. Labium subelongatum (membranaceum tamen). Calyptra jam minima (ut in *Homalomyia* division 2, *Delia* R. D.). Antennæ pedes alæque *Homalomyiæ*."

† I consider that this should be looked upon as a specific, and not as Haliday made it, a

In November, at Montpellier, we find in abundance, under the leaves of *Quercus pubescens*, the small flattened gall, in form of a small shirt-button, applied to the lower surface of the leaves. These brown, rather hard, galls fall to the ground in the winter, and from them, in the spring, comes forth the Cynipid called *Neuroterus lenticularis*, which is described by Réaumur.

All the individuals of a species of this genus are identically the same. They have been deemed to be females, because they have an ovipositor and eggs, but, for my part, I believe they are without sex, and their so-called eggs are gemmations. I consider them to be larval forms, corresponding to the "phase emigrante," which I have described in my "Considerations sur la génération des Pucerons;" and I give the reason why I so understand it.

I found, in the month of April, a *Neuroterus* occupied in puncturing a terminal bud of a young oak. Over the little branch bearing this bud, I slipped a tube like a lamp-glass which I fixed thereon, at one end, by a cork cut in two pieces, and having a notch in the centre to admit the branch, the other end with a cover of muslin.

My *Neuroterus* was so busy with oviposition that it did not fly away, and I was enabled to ascertain that it pierced the bud with its long, spiral ovipositor, five times one after the other. The next day it was dead, and fallen down in the tube, whence I removed it and pinned it for my collection, having first assured myself by an attentive examination that it was certainly *Neuroterus lenticularis*.

I then substituted for the tube a covering of muslin round the branch, sufficiently large to allow the leaves to develop, and in order to avoid any error, I removed all the buds except the one that I had seen pierced by the Cynipid.

On the 20th April, five days afterwards, the leaves of this bud, rather largely developed, bore five little galls of the size of small peas, fleshy and transparent, like a white gooseberry, which were the well-known galls from which *Spathegaster baccarum* is disclosed.

Half of the miracle was thus beyond doubt: an insect of the genus *Neuroterus*, proceeding from the hard, button-shaped galls of the autumn, produces by its puncture the fleshy gall of the genus *Spathegaster*.

This last genus is sexuate; it has males and females which copulate, and, if Dr. Adler has spoken the truth, which to me is beyond a doubt, because I have seen it, the female of *Spathegaster* punctures the leaves and deposits there the true egg, around which the Neuroterian gall is developed.

Presuming that the readers of this are acquainted with my theory of the phases of evolution of monoic insects, I thus classify the phases of the evolutionary cycle of *Spathegaster baccarum*, Linn.:

1. Eggs of the *fecundated* female, and the larvæ proceeding therefrom, in the hard autumnal galls	Founders. (*Pseudogyna fundatrix.*)
2. Winged emigrants without sex, all identical, having a long spiral ovipositor with which the buds are punctured (*Neuroterus lenticularis*)	Emigrants. (*P. migrans.*)
3. Egg-buds and larvæ proceeding therefrom, which are enclosed in a fleshy gall of the form of a gooseberry	Gemmations. (*P. gemmans.*)
4. Sexuated insects, *Spathegaster baccarum*, Linn., males and females	Sexuated. (*sexuata*).

Entomological tradition makes it difficult for the mind to adopt the idea that a winged form, having an ovipositor, and furnished interiorly with a store of eggs, prodigiously like an ovary, should be only a larva which will afterwards be reproduced as an apod, vermiform larva, which will lead on to sexuated forms.

I admit that this is rather difficult to understand, and yet I have before me, in my cabinet, a nymph of *Cantharis vesicatoria*, which appears quite ready to burst and render the perfect insect; eyes, feet, and mandibles are visible, and yet, I expect, as with *Meloe* and *Sitaris*, to see this pseudonymph stop in its development, again become a larva, and only then undergo the new transformations which will end in the perfect insect.

Why, then, should I not admit among *Aphides* and *Cynipidæ* a winged form perfectly imitating the perfect insect, *except as to the genital organs*, capable of suddenly producing a new larval form, which will eventually become sexuated?

The fact is there, broadly: I do not attempt to explain it, but I declare it boldly; and every one may convince himself that *a single* egg of *Phylloxera* or *a single* egg of *Spathegaster* will produce, after a series of diverse forms, males and females; and before these sexuated insects appear, would be seen winged insects which have every sign of the perfect form, except that they are all absolutely alike (in their well-known phase), and that they are reproduced without having any sex, by gemmation, sometimes with organs and modes of reproduction so like those of true females that if it were not for the *absence of a corresponding male form*, and the nature of the product accruing

It is to be quite understood that I do not compel any one to believe this, but it is very easy to verify all that I have advanced; for almost all plants nourish *Aphides*, and, at least, twenty or thirty species of *Cynipidæ* are abundant on our oaks; and it is only required to show if I am in error in what it consists. As to the anatomy, I beg to be excused, not knowing anything of it; but when I see a fact so patent as, for example, that of an insect coming out of a gall, and by its puncture producing, *before my eyes*, one totally different, whence comes another insect, I can well say that the first is simply a link in the complete evolution of the creature. This system will probably reduce by half the number of species, and, perhaps, of the genera, in the two groups mentioned. This is the business of the Linné of the future, and it will not, perhaps, be a great evil.

ON THE BUTTERFLIES OF THE GENUS *TERACOLUS* OCCURRING AT ACCRA, GOLD COAST.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

In my Revision of the Lepidopterous genus, *Teracolus* (P. Z. S., 1876, pp. 125—165), in which 129 species were enumerated, only five were noted as occurring upon the Gold Coast.

Last year, Mr. E. T. Carter sent us eight examples (four species) from Accra (representing, so far as he then knew, the whole of the species obtainable there): finding that the greater part of these differed from any specimens which we possessed, he, at my request, very kindly obtained more examples, which he has generously presented to the Museum collection.

The following is a complete list of the species collected by Mr. Carter.

1. TERACOLUS CARTERI, *sp. n.*

♀. Allied to *T. Isaura* and *T. Helle* of Abyssinia, and *T. Hyperides* of S. Africa; but decidedly larger, altogether more brightly coloured, and with much broader external borders than any of these species.

Wings, above, pale sulphur-yellow, the basal area, almost to the middle, suffused with greyish-brown; a broad, internally dentate-sinuate, blackish-brown external border; primaries with the apical two-thirds of the costal margin blackish; a conspicuous oblique black spot at the end of the cell, and a much larger, but diffused, spot at external third of interno-median area; apical area, almost to the middle of the wing, vermillion-red, with a slight magenta shot, its outer edge oblique, and with a diffused orange border; this red area is divided by longitudinal, black-brown stripes upon the veins, and interrupted in the middle by an oblique band, widest upon the costa, and extending to the third median branch; secondaries with traces of the usual rectangular greyish-brown stripe, producing the appearance of a submarginal series of seven inverted bell-shaped spots; body black, with greenish-grey hairs: wings, below, white; the basal area broadly suffused with sulphur-yellow; the external border also yellowish, crossed by tapering longitudinal black stripes on the veins; outer margin narrowly black, fringe white; primaries with the discoidal and interno-median black spots as above; a broad, oblique, reddish-orange, sub-apical belt, in the centre of which is an abbreviated, oblique, dusky line, representing the narrow band of the upper surface; secondaries with the basal half of costal border, a streak on the interno-median interspace, the indistinct angulated discal stripe, and a black-dotted conspicuous spot at the end of the cell, bright cadmium yellow; body, below, white. Expanse of wings, 56 mm.

One fine example obtained.

2. TERACOLUS OCALE.

♀. *Anthocaris Ocale*, Boisduval, Sp. Gén. Lép., 1, p. 584, n. 37 (1836).

The ordinary female is described by M. Boisduval; but his specimen evidently had the external area of the secondaries somewhat more suffused with blackish than in the example before me, since the angulated discal stripe is said to be confounded with the outer border; this character, however, is liable to variation in other species of the genus.

The male and the albino-female fulfil Dr. Boisduval's supposition respecting the male, "nous soupçonnons que le mâle doit avoir une grande analogie avec celui de cette dernière espèce" (*Arethusa*), since they principally differ in their smaller size, smaller and better separated black marginal spots, and in the paler coloration of the under-surface: Cramer's figures of *T. eborea*, ♂ (pl. 352, C. D.), would do very well for the male of *T. Ocale*, if the apical band were vermillion-red instead of carmine.

3. TERACOLUS ARETHUSA.

♀. *Papilio Arethusa*, Drury, Ill. Exot. Ent., II, pl. 19, figs. 5, 6 (1773); ♂ (*Anthocaris a*), Boisduval, Sp. Gén. Lép., 1, 582, n. 35 (1836).

Five females.

The male of this species appears to be rare; we now possess only two, to nine females.

4. TERACOLUS ANTIGONE.

The female is like a very dwarfed form of the female *T. Arethusa*; but differs on the under-surface in its altogether paler colour and much less pronounced markings.

5. TERACOLUS CONIGER, *sp. n.*

♂. Nearly allied to *T. gelasinus* of Angola but differing in having a broad grey stripe along the internal border of the primaries, and the base of the secondaries grey, as in *T. interruptus*; the black (internally zigzag) external blackish border of the primaries very narrow, scarcely wider than the black costal border; the veins and the two black squamose spots on the orange area less prominent; the marginal black spots on the secondaries sharply defined and conical; the orange sub-apical patch on the under-surface of the primaries uniform in colour throughout; and, therefore, considerably larger than in *T. gelasinus*; the costal border, discoidal cell, and apical border, sulphur-yellow. Expanse of wings, 40 mm.

One example only obtained.

6. TERACOLUS MINANS, *sp. n.*

♂. Wings creamy-white above, with rather broad, internally dentated, external black-brown borders, that of the primaries continuous, and throwing back longitudinal blackish stripes along the veins; that of secondaries interrupted between the veins, so as to produce a series of sub-conical spots; primaries with a blackish internal streak to outer third; apical area broadly orange, with oblique inner edge; two blackish dots on the third median and lower radial veins, as in the allied species; secondaries slightly blackish at the base; body black, thorax slightly bluish, with greyish hairs in front; wings, below, white, a marginal series of black dots; primaries with the discoidal cell, sub-costal area and external border sulphur-yellow; a semi-circular, sub-apical, orange patch; a squamose, grey, interno-median streak, ending in a blackish spot; a black dot at the end of the cell; secondaries with the basal half of costal margin orange; an orange and black dot at the end of the cell: body, below, white. Expanse of wings, 35—38 mm.

♀. Differs from the male, above, in the broader and grey internal streak on the primaries, in having the orange area crossed just before the middle by a slender, oblique, elbowed black stripe, and in the decidedly broader external border of these wings; the secondaries differ in having a blackish costal spot, and an undulated, squamose, blackish, or greyish, streak from the third marginal spot to the first median branch; below, the primaries show a trace of the oblique stripe across the orange area; the blackish interno-median spot is continued upwards as a small greyish spot above the internervular fold; the secondaries are creamy-yellow, washed with sulphur-yellow on the external border, the orange costal stripe and discoidal spot are more prominent, and the costal spot and discal streak of the upper surface are indicated by congregations of olivaceous-grey scales.

Expanse of wings, 36—40 mm.

Two pairs.

This species is nearly allied to the following, but appears to me to be distinct.

7. TERACOLUS PHLEGETONIA.

♂. *Anthocaris phlegetonia*, Boisduval, Sp. Gén. Lép., 1, p. 576, n. 25 (1836).

The female chiefly differs from that sex of *T. minans* in the wider black stripe across the orange area of the primaries, and the marking of the secondaries above, exactly like that of the male *T. Eione* from South Africa; on the under-surface the greyish stripe across the orange area of the primaries is far less distinct, and the secondaries are altogether paler. Expanse of wings, 43 mm.

One female example.

This concludes, so far as is at present known, the species to be obtained at Accra.

British Museum:
January, 1882.

NOTES ON THE ENTOMOLOGY OF PORTUGAL.

VII. *COLEOPTERA.*

COLLECTED BY THE REV. A. E. EATON IN 1880.

BY H. W. BATES, F.R.S., AND D. SHARP, M.B.

[The *Coleoptera* collected by Mr. Eaton may probaby prove not of so much importance as the insects of other Orders, in consequence of the beetle-fauna of the country having already been much studied. We think it advisable, however, to give a list of the species captured, with localities, and more especially because Prof. M. P. d'Oliveira has just commenced in the "Revista da Sociedade de Instrucção do Porto," ii, No. 2 (February, 1882), a "Catalogue des Insectes du Portugal" (printed in French), commencing with the *Coleoptera.*—EDS.].

GEODEPHAGA.

Cicindela campestris, L.—One example, Cea, approaching in its somewhat flattened and strongly granulated elytra the local form *maroccana*; in colour it is conformable to the typical *campestris.*

Carabus galicianus, Gory.—One example, near Villa Real.

C. melancholicus, Fab.—Cea.

C. Steuarti, Deyrolle (Ann. Soc. Ent. Fr., 1852, p. 240, t. 5, f. 3).—One ♀ example, near Villa Real, beside a streamlet at an altitude of 2700 feet. This species has been long considered a variety of the

282), who has found that, besides its differences of form and sculpture, the anal forceps of the ♂ is essentially different from that of *C. guadarramus.* It was originally discovered in a wood near Oporto, and seems to be confined to Portugal and the province of Asturias in Spain.

Chlænius velutinus, Dufts.—Three specimens, Almodovar, resembling in size and colours examples from Tangier.

C. agrorum, Oliv.—One example, Alemtejo.

C. gallæcianus, Chaud., Monogr. Chlæn., No. 81.—One ♀ example, hills above Salamonde, agreeing with M. de Chaudoir's description in all respects, except that the sparsely and rather finely punctured interstices are distinctly elevated.

Oodes hispanicus, Dej.—One example, Almodovar.

Licinus peltoides, Dej.—Two examples, Lisbon.

Anchomenus marginatus, Lin.—Lisbon.

Steropus gagatinus, Germ.—One example, Alemtejo, similar to others from Tangier, with which it has been compared.

Patrobus rufipennis, Dej.—One example, Almodovar.

LAMELLICORNIA.

Scarabæus laticollis, Lin.—Monchique, Alemtejo.

Copris hispanus, Lin.—Algarve.

Onthophagus fracticornis, Preyssl.—Algarve.

Geotrupes momus, Lin.—Algarve.

Hymenoplia strigosa, Illiger.—Algarve.

Chasmatopterus hirtus, Blanch.—Almodovar.

Rhizotrogus flavicans, Blanch.—Many examples, Monchique. *R. æstivus*, Oliv.—Cea. *R. limbatipennis*, Villa.—One example, hills above Salamonde.

Oxythyrea stictica, Lin.—Monchique, Cintra, Lisbon.

LONGICORNIA.

Agapanthia suturalis, F.—Algarve.

Calamobius gracilis, Creutz.—Almodovar.

H. W. BATES.

DYTISCIDÆ.

Hydroporus lituratus, Brullé.—Almodovar.

Agabus brunneus, F.—Almodovar.

Meladema coriacea, Cast.—Almodovar.

GYRINIDÆ.

Gyrinus Dejeani, Brullé.—Lisbon.

HYDROPHILIDÆ.

Hydrobius convexus, Brullé.—Cea.

SCYDMÆNIDÆ.

Mastigus prolongatus, Gory.—Cea, Cintra.

CLAVICORNES.

Necrophorus vespillo, L.—Monchique.

Telopes sp.——*?*.—Algarve.

ELATERIDÆ.

Athous sp.——*?*.—Cintra.

MALACODERMES.

Luciola lusitanica, Charp.—Lisbon and Cintra.

Telephorus melanurus, L.—Monchique. *T. sp.*——*?*.—Cintra.

Henicopus hispidus, Ramb.—Algarve.

Haplocnemis andalusiacus, Ros.—Algarve. *H. sp.*——*?*.—Almodovar.

Dolichosoma nobile, Ill.—Monchique.

HETEROMERA.

Tentyria glabra, F.—Alemtejo. *T. sp.*——*?*.—Algarve.

Scaurus punctatus, Hbst.—Alemtejo.

Pandarus castilianus, Pioc.—Villa Real.

Opatrum nigrum, Kust.—Lisbon.

Cossyphus Hoffmanseggi, Hbst.—Lisbon, near Bemfica, on the hills.

Misolampus gibbulus, Hbst.—Monchique.

Omophlus ruficollis, F.—Alemtejo, common in flowers of cistus; *var.* with entirely black thorax, Algarve.

Œdemera nobilis, Scop.

Meloë insignis, Charp.—Alemtejo; abundant near Almodovar. *M. tuccius*, Rossi.—Lisbon, on the hills west of the city.

CURCULIONIDÆ.

Brachyderes lusitanicus, F.—Cintra, Monchique.

Polydrusus setifrons, Duv.—Almodovar.

Sitones gressorius, F.—Monchique.

Phytonomus sp.——*?*.—Algarve.

PHYTOPHAGA.

Clythra sp.——*?.*—Algarve. *C. sp.*——*?.*—Almodovar.

Cryptocephalus sp.——*?.*—Cintra.

Chrysomela sp.——*?.*—Monchique. *C. americana*, L.—Monchique. *C. Banksi*, F.—Lisbon.

Timarcha sp.——*?.*—Lisbon.

Entomoscelis adonidis, F.—Cintra.

Malacosoma lusitanicum, L.—Almodovar.

Haltica sp.——*?.*—Cea.

Sphæroderma cardui, Geb.—Cintra.

Cassida equestris, F.

COCCINELLIDÆ.

Coccinella 7-punctata, L.—Algarve. *C. variabilis*, Ill. *C. sp.*——*?.* —Algarve.

D. SHARP.

Note on Drepana sicula.—A rather singular instance of variation (or even of degeneration from the type) arising, probably, from extreme isolation and consequent in-breeding, seems to be afforded by *Drepana sicula* in its one British locality—Leigh Woods, near Bristol.

In comparing specimens from this locality with typical continental specimens it may at once be seen that there is a great difference in the markings of the *hind*-wings. Between the two delicate indented brownish lines that cross the hind-wings, and in contact with the posterior of them, is, in continental examples, a large blotch of a delicate warm fawn-colour, within which are two or three small, pale yellow spots, and just behind the posterior line is a pair of distinct, round, black dots, the lower one being the larger. But in the Bristol specimens, as far as I have seen, the fawn-coloured blotch is extremely faint, the contained yellow spots hardly visible, and the twin black dots in most cases totally obsolete. I have traced them in one specimen, but much smaller and *closer together* than in continental specimens, and Mr. Grigg, who has seen most of the recent specimens, assures me that these two black dots are almost invariably absent.

This is the more remarkable because in the same specimens the *fore*-wings are often as strongly marked—with all markings complete—and as usually coloured as those from abroad, and they are scarcely inferior in size.

Much more serious results from—apparently—isolation and breeding-in, appear to be the extreme sluggishness of the perfect insects, which are scarcely ever seen to fly, the great difficulty of obtaining fertile eggs, and the subsequent delicacy of the larvæ, all of which seem to point to the gradual extinction of the species in this locality.—Chas. G. Barrett, Pembroke: *16th February*, 1882.

Early appearance of Vespa germanica, Fab.—The unusually mild winter through which we are just passing, seems to forecast an early and, probably, prosperous season to entomologists generally, if we do not experience sharp frosts with biting east winds in March and April; at any rate, the following facts would almost lead one to suppose so:—While out for an entomological ramble on the afternoon of the 20th of last month across Wimbledon Common, I was surprised, on coming up to the remains of a felled oak, to see three queen-wasps flying lazily about the trunk, I at once captured and boxed them, and, on looking more particularly at the tree, I found the bark was in several places leaving it, it being in an advanced state of decay; on ripping off the bark in one place I found no less than thirty-eight more, in a state of stupor or torpidity, and all huddled up as close as it was possible for them to get; there had been, the night previous, a sharp frost, and the rime was still on them and all round them, the bark being saturated with moisture; on placing some of them in the palm of my hand, they speedily recovered, and walked about as though they appreciated the warmth; some few of them I took home, and, placing them loosely on my study table, they very soon flew about the room; the circumstance of so many being found hibernating together is certainly very unusual, and, probably, unprecedented. The late Mr. Smith, in his Catalogue of Fossorial *Hymenoptera*, speaks of a female of *V. vulgaris* being seen on the wing on February 13th, 1859, at Hampstead; but I can find no account of *Vespa germanica* being met with in January before. *Vespa* was not alone, as a resident under the same bark, there being numbers of *Rhizophagus bipustulatus*, as well as *Cis boleti*, *Dryocœtes villosus*, *Homalium vile*, *Conurus pubescens*, *Atomaria peltata*, &c., and innumerable specimens of the Order *Thysanura*. I am indebted to the kindness of Mr. E. Saunders for identifying the wasp.—T. R. Billups, 20, Swiss Villas, Coplestone Road, Peckham: *February* 10*th*, 1882.

Notes on the Coleoptera of the Hastings district.—During November and December last, I worked at a hot-bed in Guestling, and, among other things, turned up the following *Trichopterygia*:—*T. grandicollis*, in some numbers; *T. sericans*, very abundantly; *T. anthracina*, a few only; *T. picicornis*, of this rarity I secured only one specimen; *T. atomaria*, one only. *Pt. apicale*, literally swarmed. I was pleased to meet with *Philonthus thermarum*, which, I fancy, is not very common; *Phil. discoideus* was rather plentiful; I have not met with this latter in any other situation. *Cilea silphoides*, *Acritus minutus*, *Micropeplus staphylinoides*, *Falagria sulcata*, *Homalota longicornis*, *Hom. fusca*, *H. fungi*, *var. dubia*, *H. melanaria*, *Scydmænus hirticollis*, *Eumicrus tarsatus*, *Oxypoda opaca*, *O. alternans*, *Stenus declaratus*, *speculator*, *unicolor*, Er., and several other common things occurred. Probably, I might have got a longer list, had not the hot-bed been destroyed. I hope to work at the same again in the spring, when it (the hot-bed) is re-made.

The following may be worth recording:—*Ptenidium formicetorum*, from rotten wood; *Ilyobates nigricollis*, sand-pit at Guestling; *Aleochara cuniculorum*, several taken at Guestling, in May, I believe, from dead birds; *Atomaria atra*, Kr., I took, by sweeping, at Battle. *Rhyncolus cylindrirostris* was very plentiful in an old beech tree. *Bryaxis Waterhousei* occurred at Rye somewhat sparingly under stones

I must not fail to mention that I am greatly indebted to the Rev. W. W. Fowler, who has kindly looked over nearly all of the above, and who also sent the *Trichopterygia* he was not certain about to Mr. Matthews. *A. atra*, Kr., was determined by M. Fauvel, to whom Mr. Fowler sent it, as was also *Al. cuniculorum*. —E. P. Collett, 12, Springfield Road, St. Leonards-on-Sea: *February*, 1882.

Reoccurrence of Polystichus vittatus at St. Leonards.—I am pleased to be able to report that *Polystichus vittatus* has turned up again in its old haunts at Bopeep, near St. Leonards. Only a single specimen, however, has yet rewarded my efforts; this I took under rejectamenta a few weeks ago.—E. A. Butler, Hastings: *January 23rd*, 1882.

Information for Coleopterists.—We have reason to believe that a new Catalogue of British *Coleoptera*, compiled by Mr. F. P. Pascoe, and brought down to date, is on the eve of publication.

No. 1 of the new "Revue Coléoptérologique" (*cf. ante*, p. 190) is before us. The publication appears likely to become a very useful one when the editor can get it into working. In size and general "get-up" it reminds us of the "Comptes-Rendus" of the Belgian Entomological Society. In it we learn that Putzey's collection and library have been bequeathed to the latter Society, not to the Museum, although they will be under the same roof.—Eds.

A request for European Thysanoptera.—I have selected the group of *Thysanoptera* for a special study, and I am very much in need of specimens of the described European species, to be enabled to avoid the renaming of species which very probably are found both in Europe and America. I have, therefore, written to Mr. A. G. Butler for his kind advice as to how or from whom I possibly could obtain specimens, and was kindly referred to you, saying that you might be able to give me some either help. Will you, therefore, allow me to ask respectfully for your kind assistance, to furnish me with specimens during the coming season, either determined or undetermined, or to give me the address of persons, especially of gardeners or farmers, interested somewhat in entomology, or of some botanists who are collecting plants themselves, so that I may correspond with them; perhaps many of your friends in different parts of the country would be so kind and willing to collect these insects for me if you would kindly urge my wish to them, and at the same time send them a list of plants on which the different species are to be found; to enable you to do so, if you should kindly decide to assist me in my researches, I will give here a list of species and the plants upon which they are found; there will be no need for your friends to determine any species, if all the specimens collected from one kind of plant are kept separate, with the name of the plant attached to them.

Phlœothrips ulmi, under bark of dead elms and other trees; *Phl. statices*, in flowers of Armeria maritima; *Phl. pini*, numerous under bark of old pine stumps; *Heliothrips adonidum*, in flowers and on leaves in hot-houses; *Sericothrips staphylinus*, in flowers of Ulex europæa; *Chirothrips manicata*, on spikes of grass; *Limothrips denticornis*, on heath and grass; *Lim. cerealium*, very common on grass and cerealia; *Aptinothrips rufa*, in great numbers in spikes of grass and cerealia; *Apt. nitidula* on the heads of Plantago maritima; *Thrips ulicis*, in flowers of Ulex europæus, Crocus susianus, and corn; *Thr. phalerata*, on Lathyrus pratensis; *Thr. obscura*, common on wheat; *Thr. ulmifoliorum*, on leaves of elm; *Thr. atrata*, in flowers of Convolvulus soldanella, Dianthus, Centaurea cyanus, Campanula; *Thr. vulgatissima*, in all kinds of garden flowers, especially narcissi, umbelliferæ, and plenty in flowers of Sinapis nigra; *Thr. conorrhodi*, common in flowers of wild roses; *Thr. glossulariæ*, in flowers of gooseberry; *Thr. physapus*, in flowers of Cichoraceæ; *Thr. fuscipennis* on Rumex; *Thr. ericæ*, on heath; *Thr. urticæ*, in flowers of Nasturtium, Thalictrum, Ranunculus; *Thr. corymbiferarum*, in flowers of Corymbiferæ; *Thr. minutissima*, in Umbelliferæ; *Thr. discolor*, in flowers of Cruciferæ; *Thr. livida*, in flowers of Ulex europæus; *Thr. primulæ*, in flowers of primrose; *Thr. dispar*, on Festuca fluitans and other grasses; *Thr. brevicornis*, on Festuca fluitans; *Thr. subaptera* on Plantago maritima; *Thr. juniperina*, on Juniperus; *Thr. variegata*, on flax; *Thr. phalerata*, in flowers of Vicia sativa; *Thr. atrata*, on Spergula nodosa; *Thr. persicæ*, on diseased leaves of peach; *Belothrips acuminata*, prob., in flowers of Galium verum, Lathyrus pratensis or Plantago on sand-hills by the sea; *Melanthrips obesa*, in flowers of Sinapis nigra, Reseda, and Ranunculus; *Coleothrips fasciata*, in flowers of Reseda.

I shall be much obliged for any favour which may be kindly conferred upon me, and shall be most happy, if I should be able, to assist in return.—THOMAS PERGANDE, 321, D Street, S.W., Washington (D.C.), U.S.A.: *January*, 1882.

[Possibly this request may bring to the front some at present unknown student of British *Thysanoptera*.—EDS.]

Measurements in descriptive Entomology.—Under this title my friend, Mr. McLachlan, suggests (p. 205 *ante*) that British "descriptive Entomologists" should agree to adopt millimètres as the measure for insects; and for this course, two chief reasons are adduced. First, that some use the English inch as their unit instead of the Paris inch; and, second, that the millimètre is better than either. Now, I have nothing to say in defence of those who have employed the English inch, except only when they have written *coram populo*, for those to whom the Paris inch would be a myth, because the Paris inch with its divisions into 12 lines was the accepted standard, as Burmeister has shown. But I know two Englismen, at any rate, and there are doubtless more, who have always used the Paris line in their descriptions, and never a word has been heard about any insufficiency. And such lines are sufficient, because the minuter dimensions of millimètres are misleading, even with respect to insects of comparatively small dimensions, for this reason, that absolute exactness in the stature of the individuals of a species does not exist, and line-measurement is amply sufficient to express the average size and range of variation of any ordinary insect. Any thing less than half a line in length is microscopic, and for such objects microscopic measurements must confessedly be adopted; these are equally beyond lines or millimètres. But to give in millimètres the dimensions of a butterfly which is several inches in expanse, or of a Goliath beetle or other enormous insect, the individuals of the species, moreover, varying extremely in size, is about as reasonable as always to quote large money-value in *centimes*. So that there is really no advantage to any one in using millimètres instead of the Parish inch or

But, suppose we were all agreed, on the score of the universal brotherhood of science, to be reformed, become decimal-doctrinaires, and give up for the future the use of one measure for the other, what is to be said about the old and young brethren of all countries who have already described thousands of insects with the old orthodox style of measurement, and the trouble they have given to their successors if their "lines" are to be converted into millimètres? Could they not well ask—"To what end will you do this, considering you understand perfectly well what is intended, and what will you have gained when you have done it?" Truly, this suggestion of the use of smaller measurements seems to be founded on the fallacy above mentioned, and the moderns who have introduced and would enforce the Procrustean standard of millimètres, to the exclusion of lines, are really the authors of needless trouble, and have much to answer for. But if it is now too late to revert to the inch and line exclusively, and it is desirable to meet objectors, the equivalent to the old measure, whatever it may be that shall be employed, could be added in millimètres, like the different thermometrical readings of Fähreinheit, Réaumur, or Centigrade, which, for those who may be concerned, are often put in conjunction.

It only remains to notice what pertains to the measurement of parts of insects, and to say that such is rarely given in figures, or if so given, is of much value; a comparative statement of relative proportion being far better, because such proportion is at once recognisable by the eye, without reference to any detached scale.

Mr. McLachlan's suggestion must be understood as his own personal proposal, and my dissent must also be considered my own individually, like the expression of the opinion of any other contributors; neither being in any way put forth editorially. —J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: *February 1st*, 1882.

Measurements in descriptive Entomology.—Owing to severe family bereavement, my friend and colleague, Mr. Douglas, had no opportunity of seeing what I had written until it was on the eve of publication. This was unfortunate, because it prevented me from knowing that any British Entomologist was in the habit of using the "Paris inch" as his standard. I now find that at least two have been so doing. My friend's counter-suggestion is that the Paris inch should be our standard, to the exclusion of the English inch and the metrical (a better term than "decimal") system. No doubt the Paris inch *was* in common (not universal) use outside this country. Outside this country it is now commonly (but not yet universally) abandoned by all nations in favour of the metrical system, which is the generally accepted "standard," an end at which my suggestion was aimed. The now venerable Burmeister, who, in 1832 (English translation, 1836) when a young man of 25, wrote that "the Paris line has been adopted as unit," has now, at the age of 75, so far conformed to general usage, that in his works on the insects of the Argentine Republic, he places the metrical equivalents in brackets after the dimensions according to the Paris inch. This latter has never been in general use in this country, and I hardly expect it will now find favour as a standard with us, after having been pretty generally abandoned abroad. It appears to me much to be preferred that those British Entomologists who object to the millimètre should continue to use (as most of them did use) the English inch; it is familiar to all "Britishers" (though not always so to our foreign brethren), and it is not good that there should be two measurements in use with us bearing the same name but not equivalent in value. For my part, I have not the slightest uneasiness as to our ever adopting an *almost obsolete* measure in the place of our own "inch," but I think the otherwise almost universally-accepted metrical standard will gradually be more and more recognised, and used, by us, when measurements may be required that concern other than British Entomologists (who will presume to draw the line?). That "thousands of insects have been described under the old system" (the "old system," according to most British Entomologists, would mean the English inch) is of little importance; monographic work is gradually reducing these, even in measurements, to a standard, which I take to be the aim (even if sometimes visionary) of every scientific writer. Some other points in my friend's notes (such as the definition of a microscopic object, and the importance of minute dimensions of *parts* of insects) must be passed over. The thermometrical allusion shows sufficiently the want of a "standard," as most of us have felt; but I may be permitted to say that our own scientific physicists and chemists now almost generally adopt the "Centigrade" reading as their "standard."

I made only "a suggestion," but it has occasioned with me an amount of correspondence, and verbal interchange of ideas, that were never anticipated. It was really addressed to British Entomologists, who in the course of their studies have been obliged to consider the question otherwise than as exclusively British. I will be especially grateful to those amongst us who use, or favour the use of, the *Paris inch*, if they will acknowledge such on post-cards (its use amongst us, unacknowledged and unsuspected, I take to be of serious importance); the question of the general adoption of the metrical system, or of the English inch, I leave to those whom it may intimately concern; each of our Entomologists can judge for himself, and the editors do not desire to raise a controversy on the subject.—R. McLachlan, 39, Limes Grove, Lewisham: 13*th February*, 1882.

The New Zealand Journal of Science.—A Journal under this title, a large portion of which will be devoted to Natural History, has been commenced at Dunedin, New Zealand, edited by Mr. G. M. Thomas, F.L.S. (published by Wilkie and Co.). At present it will consist of 48 pp. bi-monthly at 10 shillings per annum. Amongst the "contents" of No. 1 we notice a long paper by Capt. T. Broun, on "How to collect and preserve *Coleoptera*."—Eds.

Review.

Proceedings of the Perthshire Society of Natural Science, Vol. i, Pt. i, 1880-81 (1881), pp. 1—42, small 4to. Published by the Society.

The completion of the Perthshire Natural History Museum at a cost of nearly £2000 (forming the Moncrieff Memorial Fund) has been taken advantage of by the Society for the commencement of the publication of "Proceedings," of which the first part is before us. At present, entomology is insufficiently represented, almost the only paper being one by Mr. S. H. Ellison, on the "Butterflies of the Perth District;" but under the energetic care of the Editor, Dr. Buchanan White, we doubt not that more space will be devoted to our science in future parts. Geological information is very full, as was natural under the Presidency of so distinguished a geologist as Prof. Geikie; so is the botanical part; and the records of excursions are very useful, readable and instructive. We wish the Society all success in its new [redacted]

NOTES ON THE LEPIDOPTERA OF WEST NORFOLK.

BY EDWARD A. ATMORE.

Probably the first insects worth boxing, which put in an appearance in this district are *Brephos Parthenias*, observed flying about woods in the sunshine as early as the middle of March, and *Cymatophora flavicornis* easily obtained about the same time by sugaring the birch-trees. An odd specimen of *Amphidasis prodromaria* may also be picked off tree-trunks. By visiting the sallows in average seasons, at the beginning of April, a few *Tæniocampa munda*, *T. rubricosa*, *T. gracilis*, *Xylocampa lithorhiza*, and *Trachea piniperda* are met with, and of course a host of the commoner *Tæniocampæ* and hibernated *Noctuæ* are also to be seen at this feast of the "Catkin." It is singular that I rarely meet with *Trachea piniperda* in the imago state, although I obtain nearly every year, large numbers of pupæ of that species, from the large fir-woods in the neighbourhood. It is now that *Eupithecia dodoneata* and *E. abbreviata* are taken among oaks, but neither are common, but if *Phlæodes immundana* be a desideratum, it may frequently be obtained in numbers, flying around alders, in the bright sunshine. Early in the month of May a number of species are of course on the move, their numbers increasing as the month advances. Perhaps the first to appear worth noticing are *Eupisteria heparata* and *Ypsipetes impluviata*, both of which are common among the alders, and I found them more abundant than usual, last season. *Ephyra pendularia* and *Drepana falcataria* are of frequent occurrence amongst birch, which trees also yield a few *Eupœcilia maculosana* and *Lobesia reliquana*, the latter flying during sunshine. *Tephrosia punctulata* is common on alder and birch trees, its conspicuous outspread wings when at rest on the trunks rendering it by no means a difficult object to detect. In some woods *Asthena candidata*, *Cidaria silaceata*, and *Ephyra omicronaria*, the latter amongst maple, are fairly plentiful. Our heaths are enlivened by day with numbers of *Phragmatobia fuliginosa*, *Saturnia Pavonia-minor*, *Phytometra ænea*, and *Anarta myrtilli*. The cocoons of *Phragmatobia fuliginosa*, resembling a piece of wool, may sometimes be found amongst ling *(Calluna vulgaris)*. *Polyommatus Agestis* and *Thecla rubi* are also locally abundant on heaths, but the latter I find is more abundant in dry woods, where the trees are rather scattered. Of the *Eupitheciæ* the following are common: *E. nanata* on heaths, *E. assimilata* in gardens, *E. indigata* in fir woods, *E. lariciata* amongst larch, and *E. exiguata* amongst hawthorn; the beating stick employed on hawthorns will not be altogether unproductive, as by its means may be obtained plenty of *E. castigata*, and near the end of the month numbers of *Corycia taminata* with an occasional *C. punctata*, *Eupithecia coronata* and *E. satyrata*. At the end of the month, in damp woods on the imperfectly drained fen-lands, *E. pygmæata* is no rarity. This species in its habits bears a remarkable resemblance to many of the *Diurni*, flitting about as it does from flower to flower during sunshine, preferring, it seems to one, the flowers of species of *Ranunculus* and *Stellaria holostea*, upon which last named plant, the ♀ deposits its egg, at least so I am given to understand. Owing to its small size and dark colour it is not easy to see this species, and from its activity, I find it is not very easily captured. Of the *Tortrices* occurring here in May, the genus *Phoxopteryx* is not badly represented, but only *P. Lundana* maybe said to be ubiquitous, or nearly so; *P. siculana* and *P. uncana* are very local, although in their restricted localities numbers may be taken; *P. biarcuana* and *P. inornatana*, although not so plentiful, are far from being scarce; *P. diminutana*, however, must be considered scarce. A few more *Tortrices* are now and then met with, such as *Clepsis rusticana* among *Myrica gale*, *Stigmonota compositella* among clover, but to my knowledge only single specimens of *S. perlepidana*, *S. internana*, and *Retinia turionella* have been met with up to the present time.

Early in June when *Eupithecia pygmæata* is still abroad, and perhaps this is the best time to search for it, *Emmelesia affinitata* may be boxed by the score where its food-plant *Lychnis diurna* grows, more especially frequenting woods; at the end of the month the smaller *E. alchemillata* among nettles, and *E. albulata* among *Rhinanthus crista-galli* are equally common; *Botys lancealis* is more local, but where it does occur is plentiful. Other species which are taken more or less plentifully in this month are *Abraxas ulmata* among elm, *Asthena luteata* among maple, *Scotosia undulata* and *Lobophora hexapterata* (both rather local) among sallows, *Melanthia albicillata*, *Miltochrista miniata*, *Anticlea rubidata*, *Melanippe unangulata* and *Rivula sericealis* generally in woods, where also *Xylophasia scolopacina* may be met with, flying at dusk. *Erastria fuscula* frequent among fir trees, and comes freely to sugar, *Ellopia fasciaria* and *Lithosia aureola* also among fir, but not commonly; in woods also a sprinkling of *Gnophria rubricollis*, *Acidalia subsericeata*, *A. inornata*, *Eurymene dolobraria*, *Herminia barbalis*, and *Aventia flexula* may be obtained. In the fenny districts *A. immutata*, *Nonagria despecta*, and *Collix sparsata* are found flying and *Oxyptilus teucrii* may be dislodged from the *Teucrium scorodonia* (wood-sage) growing there, and perhaps it is worth noticing here that a single specimen of *Acidalia rubricata* has been taken on one of the heaths. At the end of the month *Coremia quadrifasciaria* appears in woods and is no rarity. This species seems to be generally distributed throughout the county, but I believe its head-quarters are in the Western and North-Western parts. It selects for repose the trunks of trees from which it is easily dislodged by the beating stick, and if unmolested after being thus disturbed, it quickly settles again on the same or on some neighbouring tree. On the higher grounds in this district *Strenia clathrata* is common enough to be designated a pest, yet it is worth boxing, as some nice varieties are met with. Of the *Eupitheciæ* not already mentioned, *E. venosata* is common among *Silene inflata* (Bladder Campion); *E. centaureata* abounds in some spots, especially where *Centaurea* grows in any quantity; *E. linariata* occurs more sparingly among *Linaria vulgaris* (yellow toad-flax), and *E. rectangulata* is far too abundant in orchards: I have seen scores sitting on the lee-side of railings, having been blown *nolens volens* out of an orchard close by. In the salt-marshes a few *Acidalia emutaria* are to be found flying at sunset. Sugar is not remarkable for the number of good things it entices (at least, such is my experience); however, by its means a few *Mamestra anceps*, *Apamea gemina*, *A. unanimis*, *Dipterygia pinastri*, *Rusina tenebrosa*, *Acronycta aceris*, *Hadena atriplicis*, *Leucania comma*, *Cymatophora duplaris*, and *Axylia putris* may be picked out of the host of commoner species congregated on sugared trees. I have also just seen a fine specimen of *Cymatophora ocularis* which was taken at sugar last season by a beginner. *Acronycta leporina* I have not noticed at sugar, although I have taken it flying around birch at dusk. *Plodia interpunctella* is very abundant in the grain warehouses of the King's Lynn Dock Company, where its larvæ probably feed on the grain or locust-beans. A few *Crambus cerussellus*, *Eupœcilia nana*, and *E. atricapitana* are taken on heaths, the latter among *Senecio jacobæa* (Ragwort); *E. udana*, *Adela rufimitrella*, and *Incurvaria Œhlmanniella* are met with sparingly in the fen districts, where also a single specimen of *Phlæodes Demarniana* has been taken by my brother; acting on the principle that "where there is one there are others," I have searched every season for this species, but my efforts have been unsuccessful up to the present time. Of the other *Tortrices* occurring in June, I note *Semasia nanana* among spruce-fir, *Dichrorampha simpliciana* and *Ephippiphora fœneana* among *Artemisia vulgaris* (Mug-wort); *E. trigeminana* rather common among

Senecio jacobæa, and *Antithesia corticana* among birch. In July many of those which come out at the end of June are still on the wing, although of course some of them are getting decidedly the worse for wear. It is now that *Polyommatus Ægon* is swarming on some of the heaths by day, and long before sunset on the boggy portions of similar places, the sluggish *Schrankia turfosalis* is on the move, and in its restricted haunts is very abundant, but it is, nevertheless, rather difficult to procure in good condition; this species at the approach of danger quickly betakes itself to the under-growth, from which it cannot often be put out. When in captivity it is restless and should, therefore, be stifled as soon as possible, and afterwards pinned in the relaxing box; if boxed alive the specimens are generally worthless in the morning. A little later in the evening *Hypenodes costæstrigalis* is roving about and is certainly as fond of sweets as any *Noctua*, but I find its near relative *S. turfosalis* is not to be allured by the employment of any such medium as sugar. In woods during the month *Macaria liturata* and *Thera firmata* may be dislodged from scotch-fir, the handsome *Geometra papilionaria* from alders, *Angerona prunaria* from sloe, and *Phorodesma bajularia* from oak. Of the *Eupitheciæ*, *E. succenturiata*, *E. subnotata*, and *E. subfulvata* occur, but only the last is common. *Pionea stramentalis* is abundant, but local, in some grassy places in woods. A few *Triphæna interjecta*, *Orthosia suspecta*, and *Tethea subtusa* are perhaps the best of those which visit sugar, and on the coast a few *Agrotis valligera* and *Hydræcia nictitans* are found flying at dusk. *Crambus warringtonellus* also occurs on the coast along with *C. inquinatellus*, and *C. pinetellus* is occasionally met with on heaths, where also *Agrotis porphyrea* is flying about in profusion. *Crambus latistrius* and *C. hamellus* also are met with here, but are local. In the salt-marshes a few *Chilo forficellus* and numbers of *Leucania phragmitidis* are flying about the drains. The latter is also common among *Phragmites communis* (common reed) in the fen districts. Of the Micro-Lepidoptera *Dichelia Grotiana*, *Carpocapsa splendana*, and *Lithographia nisella* are not uncommon. *Choreutes scintillulana* occurs among *Scutellaria galericulata*. *Eupœcilia pallidana*, *E. Manniana* and *Carpocapsa juliana* have also occurred, but never commonly. The same remark will apply to *Euchromia ericetana* and *Calosetia nigromaculana*. *Tortrix Lafauryana* is now on the wing, in this district. I took a nice series of this species last season; to all appearance it does not seem to have been taken elsewhere in the United alders from which I first obtained *S. pedella* three or four years ago, have been cut down, and although I have visited annually the alders still standing in the same neighbourhood, my efforts have only been rewarded by the capture of a solitary specimen. At the end of July or more generally during August, a few *Noctua umbrosa*, *Hydrœcia micacea*, *Agrotis tritici*, *Cosmia affinis*, *C. diffinis*, and less commonly *Noctua Dahlii* and *Agrotis saucia* are taken at sugar; but *N. umbrosa* and *H. micacea* are very partial to the flowers of *Arctium lappa* (burdock). *Epione apiciaria* is common, and the same may be said of *Lithosia griseola*. The straw-coloured variety of *L. griseola (L. stramineola)* also occurs in the proportion of about one to eight of the normal form. Of the *Tortrices* which occur in August, *Brachytænia semifasciana* and *Semasia populana* both among sallows, are perhaps the only species worth mentioning. In some seasons, at the end of August or during September, *Sphinx convolvuli* is taken. To my knowledge but one specimen was captured last season, and that was found flying at honey-suckle. A few years ago, five were taken during one September, at honey-suckle, in a garden near Lynn. *Noctua glareosa*, *Agrotis saucia*, *Xanthia gilvago*, and some of the commoner *Xanthiæ* visit sugar during the same month, and *Halonota bimaculana* is common in some places among birch.

A glance at the foregoing list and remarks will be sufficient to show that West Norfolk varies considerably in the nature of its soil, and consequently in flora, or in other words, in its physical features. I have alluded more than once to *Lepidoptera* taken on a tract of land known as the fen-land, or fen-district, and this term is probably the best I can give to describe a strip of land lying on either side of the river Nar. The nearest part of this land, which has been but imperfectly drained and consequently in some parts is still very wet, would be distant about five or six miles from this town. From an entomological point of view I regret that its re-drainage has been under consideration for some time, and what is worse still, it is likely very soon to be an accomplished fact. The soil is black and peaty, very similar to that which one finds at Wicken and neighbourhood and its flora is also not very dissimilar. Although some plants, such as *Cladium mariscus* and *Peucedanum palustre*, so conspicuous at Wicken, appear to be absent from this fen-district, nevertheless, many plants so common at Wicken, such as *Iris pseudacorus*, *Ranunculus lingua* and *flammula*, *Thalictrum flavum*, *Spiræa ulmaria*, *Lysimachia vulgaris*, *Lythrum salicaria*, *Valeriana officinalis*, grow nearly as profusely in this district. From these facts, it is not improbable that many more species than those I have mentioned, which are plentiful in fen-districts elsewhere, might, if properly worked for, be found to occur here also.

If, however, the present drainage scheme under consideration should be carried out, many of the plants, as well as most of the species at present found, must necessarily disappear. In conclusion: should many of the localities which have hitherto, I believe, been scarcely visited by an entomologist, be worked systematically, I anticipate that some interesting *Lepidoptera* will be added to our West Norfolk fauna.

8, Union Street, King's Lynn, Norfolk:
February 1st, 1882.

SOME POINTS IN THE NATURAL HISTORY OF *PAPILIO MACHAON*.

BY WILLIAM BUCKLER.

In offering my notes on the history of this species, I know I am going upon ground to some extent already well trodden, and it is, therefore, not on the plea of telling anything quite new that I put them forward; but, knowing that there is now, more than ever, an interest felt in obtaining exact information as to the process of growth or development in the earlier stages of various forms, and being conscious that I have done my best in this case, I still hope that my work may be of use; I only wish I could impart to others anything approaching the pleasure I myself felt in watching and recording what follows.

In 1868, I had reared the larvæ from two eggs found in Burwell Fen by Mr. W. R. Jeffrey, and two more in 1871, from eggs found by Mr. C. G. Barrett, in Horning Fen, and had taken several figures in either case, but, when in 1879, Mr. W. H. Edwards of Coalburgh, West Virginia, put some questions to me on the number of moults and other points connected with them, I found I could not give such positive answers as I could have wished.

I determined, therefore, to rear the larva, if possible, again, and Mr. W. H. B. Fletcher most kindly helped to bring my project within range of possibility by sending me three eggs, on June 4th, 1880, which he had found the day before in Wicken Fen, and on the 12th a

Of course what follows is really the personal history of the individuals which I watched, and though for convenience sake I shall generalize, and sometimes use the present tense and not the past, I wish it to be understood that I speak only of what I was aware I saw; I know I made one omission, which will be noticed in its proper place.

The eggs hatched June 13th—15th, the larvæ in every case making their first meal on the empty shell, and for a day or two I supplied them with garden carrot, but after that they were fed entirely on *Angelica sylvestris;* from first to last each larva was kept separate, and its changes noted in a separated record.

The larva, on first turning its attention to its food plant, scoops out a round cell on the surface of a leaf, but after a few hours takes the bolder course of eating quite through from the edge of the leaf; it does not roam, but continues at the same part till the third or fourth day, when it moves off to some distance and on a stalk or leaf spins a few silk threads for a foothold; there it waits from two to three days for the first moult, and when this is accomplished eats the cast skin all to the head-piece, and soon after goes—apparently by design—back to the spot where it was previously feeding, and attacks the leaf again: at this stage I noticed if a larva found a speck of frass on its food, it would pick it up in its jaws, stretch out its body, and somehow project the frass away from the plant: again, after feeding three or four days it retires as before, and prepares for and accomplishes its second moult, which happens on about the twelfth day of its life; similarly the third moult comes on the sixteenth or seventeenth day, and the fourth (the last) from the twentieth to the twenty-third day, the cast skin being always eaten: after the last moult the larva feeds on for ten or twelve days, consuming a great quantity of food and making very rapid growth; I may here note that its usual attitude in repose is from the very first much like that of a *Sphinx*, with the neck-arched, and the head bent down. The earliest age at which I *noticed* the curious horns of the second segment was when I touched the larva *just after* its *third moult;* they were then much longer and thinner than they became after the fourth moult, but there accompanied their protrusion a drop or two of clear greenish liquid, and a most penetrating odour, which reminded me of an overkept decaying pine-apple: after the fourth moult the horns were of a shorter and stouter character, but I noticed that when I was holding a larva between my finger and thumb it had the power to lengthen one horn at the expense of the other (which became shorter), so as to manage to touch my finger with it; the horns are extremely soft and flexible. When full grown the larva ceases feeding, and rests for a while, and then commences its preparations for pupation by selecting a stem, and spinning on it from side to side a number of threads to ensure a good foothold; next, lying along these threads head downwards it spins at the bottom of them a broad cone of whitish silk, having a sharpish apex; then turning round it creeps up the stem a little and with the anal legs feels about till they find this cone, when they are placed close together on the stem but touching the base of the cone, and a slight pushing motion is visible by which their circlet of hooks is fixed in the silk spun on the stem: its tail end being thus fixed, the larva stretches out its head and front segments, lifting up at the same time the first and second pairs of ventral feet, and bends itself backwards in a wide sweep from one side of the stem to the other, as though to be assured there is free room for its movements; it next,—whilst in this semi-detached attitude—and with its thoracic legs rigidly extended, throws back its head, and in this way swells out its breast, like that of a pouter pigeon, leaving a deep hollow between the mouth and the first pair of thoracic legs; then it bends to one side of the stem and spins a broadish attachment for the first thread of the cincture, and presently with a slow and deliberate motion sweeps round as before to the other side, the head all the while wagging as the silk issues from the spinneret and is guided along the hollow above mentioned; as the head approaches the other side the body swells out still more as though to stretch the thread, and give it the necessary curvature; as on commencing the thread, so now on fastening it to the other side, there is a delay for a little, and the fastening seems to be made with a more liquid and glutinous quality of silk than the rest of the thread: the first thread thus completed, the larva proceeds in the same slow and methodical manner—spinning some thirty threads from right to left, and as many from left to right—or sixty altogether for the cincture, the time thus occupied being about one hour and forty-five minutes; occasionally the first pair of thoracic legs seemed to be called in use to assist at the fastening of the ends of the threads: when enough threads have been spun the larva seems to test their strength by pulling them quite taut with its projecting breast, two or three times, and then apparently satisfied, it bends down its head to put it under the cincture, and creeps up inside it till it hangs loosely round its back between the sixth and seventh segments: next it seems to relieve itself by stretching upward all the front segments that had been so engaged during meanwhile the segments of the body shorten, and their divisions deepen; the head becomes bent down close to the stem, while the body is held away from it as far as the cincture allows—drawn tight as it is into the deep division between the sixth and seventh segments, so that only the head and tail are in contact with the stem; at the end of about a day and a half suddenly the head and front segments are jerked backward four or five times in succession, next the belly is brought close to the stem and the head held up, and then in about five minutes the skin splits open behind the head on the top of the back, and the pupal thorax appears bulging out; presently is disclosed the top of the head, then the upper part of the face, and with a few nodding motions the head is freed, and the skin slowly but easily slides downwards from each side (the cincture causing not the least impediment), and as it goes drags away like little threads the linings of the spiracles; presently from out of the collapsing skin is disclosed the tip of the tail, and there is just time allowed for the observer to see that it is quite *hollow*, when in another moment it is fitted upon the *cone* of silk, and strongly pressed down, and with a repeated half screwing motion the attachment is made complete; meanwhile the moisture which exudes from the pupal surface has surrounded and fairly embedded the cincture at its line of contact with the back; the old shrivelled skin now rests in a heap between the lower part of the abdomen and the stem, but is presently, by a slight twisting movement on the part of the pupa, caused to drop off: the head and thorax gradually develop themselves, the former into two largish blunt diverging processes, the latter into a central bluntly projecting eminence, with another on either side; the larval tubercles remain as small blunt conical protuberances, the wing-covers form an angular outline, and the back becomes dull and rough; just four minutes elapse from the bursting of the larval skin to the full disclosure. (Here I must express my regret that I forgot to look for the connecting membrane which was discovered in *Pieris* and *Vanessa* by Dr. Osborne, and described in vol. xv, p. 59, of this Magazine.)

The egg of *Machaon* is globular, having a depression at the base in contact with the leaflet on which it adheres; it is of a good size and with apparently smooth surface, and when first laid is of a greenish-yellow colour quickly turning green, and soon after tinged with violet-brownish, gradually deepening to purplish, and faintly showing the embryo through the shell, which in a day or two turns entirely purplish-black, a process of change similar to that shown by a ripening black currant; the shell next assumes a light pearly transparency, and the dark embryonic larva coiled round within is plainly visible, and in a few hours hatches.

The newly hatched larva is 3 mm. long, stoutish, with shining black head and black velvety body with dark green segmental divisions, and conspicuously marked with a patch of creamy-white on the seventh and eighth segments; the pale pinkish tubercles, in some instances yellowish, rather bristly, are in two rows down either side, and in about eight hours turn dark drab, and in a day or so blackish like the third row beneath, except those on the white patch which remain white.

After the first moult, in three days the length is 8 or 9 mm., the stoutness in proportion; the head black, and the body velvety-black bearing two orange dots on the front margin of the second segment, the shining, rather pointed, black tubercles having their bases reddish-ochreous, after being for a day or so green; the white patch as before, but now bearing black tips on the tubercles.

After the second moult the length by the third day has increased to 14 mm. with increase of stoutness; the black shining head is marked on the face with a yellow chevron, and with pale yellow upper lip and bases of papillæ; the black velvety body has the white patch yet more conspicuous and encroaching a trifle on the ninth segment; the front dorsal margin of the second segment is marked with orange-yellow, and minute twin dorsal bright yellow dots are on the third and fourth, and a faint narrow transverse divisional streak of yellowish or greyish between them, other similar short streaks occur on the ninth and tenth; of the three rows of conical black tubercles on each side of the body, the two top rows have their upper bases half ringed with bright orange colour (excepting those on the white patch which have pale yellow), the lower third row have orange bases like slanting slashes; the anterior legs are whitish, tipped and spotted above with black, each ventral leg with a white crescentic mark above the foot; and there is some white on the anal flap.

After the third moult, in two or three days the length is 22 mm. and the thickness in proportion; the design now more developed shows the head yellow marked with black, and when protruded the horns coloured orange-red, the ground colour is of the palest greenish-yellow, though it is still white on the seventh and eighth segments, but showing only in transverse rings a little wider than the very narrow greenish-yellow ones round the others, for the middle of each segment is transversely banded with velvety black, but narrower on those two with white ground; the segmental divisions are greyish-black; the colour bearing the orange tubercles with black bristly apices except on the thoracic segments, where the black bands are broadest and only broken below, as on them the upper tubercles are completely surrounded with black; all the legs are white marked with black.

After the fourth moult the length in two days is 31 mm., and in five more days is 46 mm. and very stout, its size and beauty of colouring being now at their greatest; the thoracic segments swell upward in a rounded arch from the fourth which is the largest, and viewed from above sharply taper thence to the head, which is the smallest, and bends downwards; the colour of the head is bright yellow with a black oval spot on the face and two black streaks down either side, the ocelli in a black patch below, the mouth marked with black in the centre and on each side, papillæ whitish; on the front marginal ridge of the second segment occur two orange spots and two black spots in front of them close to the head, and between these pairs of spots is the concealed orifice from whence the retractile soft fleshy horns of pinkish-red colour dart forth when irritated, and when seen at this period are uniformly stout with blunt diverging extremities; the ground-colour of the smooth skin of the body is a very brilliant pale yellow-green, becoming white on the belly and ventral feet, the segmental divisions widely banded with deep purplish edged with velvety-black, and across the middle of each segment is a broad velvety-black band covered with excessively fine bristly pubescence, and bearing the orange tubercle of the upper row near the front margin, and sometimes also that of the middle row; but generally this transverse black band is interrupted by an isthmus (so to speak) of the ground-colour which bears this tubercle; and below there is always a slanting isthmus of ground-colour bearing the lower tubercle; on the third and forth segments the broad bands have only this lower interruption, and bear the orange warts of the two upper rows (here diminished in size) in their middle; the anterior legs are white with black tips and joints; the ventral legs have each a narrow streak in front, a spot behind, and a large crescentic mark of black above the white feet which have dark hooks; on the anal legs this black mark is purplish in the middle; the spiracles are blackish-slate colour situate within the lower parts of the black bands; the whitish belly has a central series of blackish blotches, and narrow transverse bands in the deeply sunk divisions.

The pupa, when come to its full colour, is pale yellow on the back and abdomen, and delicate light green on the head and wing-covers.

Emsworth: *February 28th*, 1882.

ANOTHER APTEROUS MALE IN THE *COCCIDÆ* (*ACANTHOCOCCUS ACERIS*, SIGNORET).

BY JULES LICHTENSTEIN.

In 1877, I described in this Magazine (Vol. xiv, p. 34), the first apterous male I was aware of in the *Coccidæ*: it was an underground one. Since that time I discovered also that in *Gossyparia ulmi* and *Ritsemia pupifera* the males are wingless.

To-day, I have to mention another which is completely apterous; it belongs to a well-known insect, feeding on the maple-tree (*Acer platanoides* and *pseudoplatanus*) and named by Signoret, "*Acanthococcus aceris*." The maple-tree is much inhabited by bark-lice, as I have in my collection, besides the above-named "*Acanthococcus*:" *Lecanium aceris*, Curtis, 1838; Westwood, 1840; Bouché, 1844; *Pseudococcus aceris*, Signoret and others: *Pulvinaria aceris*, Licht. (ined.): *Chionaspis aceris*, Sign. All these have winged males. Curtis and Westwood have described the *Lecanium*, and Miss Smith, of Peoria (Illinois), has lately made known the *Pseudococcus*. Leaving for another occasion the monography of the maple-lice, which will some day follow the elm-lice and terebinth-lice, described already in the "Feuille des jeunes Naturalistes," I intend to speak to-day only of the "*Acanthococcus*." The female and larvæ of that insect are well described in Signoret's "Coccides," Ann. Soc. Ent. France, 1874, p. 34; but nothing is said of the male, nor of the biology.

The male is brown-reddish, of the usual form of the *Coccidæ*, but absolutely without wings. Its length is 0·70 mm., the antennæ are ten-jointed, rather hairy, and 0·38 mm.; third joint the largest; the abdomen is terminated by a small protuberance, bearing the short penis, on each side of which are two small triangular pieces supporting two long white tails of a cottony matter, as usual in the male Coccidians.

The biology is as follows:—By the beginning of May the female lays in the interior of the bag, in which she is entirely enclosed, rather large eggs, from which are produced small oval larvæ, which gather under the leaves and remain there sucking and increasing very little until the fall, when they hide in the bark-crevices. In winter the larvæ which are to become males exude a cotton-like cocoon, entirely closed in front, but open behind.

When the cocoon is ready, and in the first half of January (here rudimentary antennæ and legs, very short (0·09 mm.), and without articulations. It is a very curious state, reminding one of the pseudo-nymph of the *Meloïdæ*.

After six or eight days there is another change of skin, the exuviæ of the pseudo-nymph are thrown out of the cocoon, and the larva takes the usual nymph appearance; the legs are 0·49 mm. long, and show their articulations. The antennæ have ten joints.

After another fortnight the exuviæ of the nymph follow those of the larva and pseudo-nymph, and the perfect imago remains in the cocoon, while the two white tails project out of it, increasing slowly in size. A few days after, the little animal comes out backwards, and runs about on the trunk of the maple, looking for its female. They copulate and the male dies, then comes the turn of the female to form her cocoon, to lay her eggs,—and the cycle begins again.

Montpellier: *20th February*, 1882.

P.S.—In the Wiener entomologische Zeitung, i, p. 60 (March, 1882), my learned friend, Dr. Franz Löw, announces that he had observed the economy of *Acanthococcus aceris* in 1877 and 1878, and had discovered that the male was apterous. It does not appear to have occurred to him to publish his important discovery until after I had written to him requesting he would communicate to the zoologisch-botanischen Gesellschaft of Vienna, my own observations on the insect, of which he makes no mention.—J. L.: *9th March*, 1882.

TWO NEW SPECIES OF *ICHNEUMONIDÆ*.

BY E. PARFITT.

POLYBLASTUS BRIDGMANI, *n. sp.*

Entire length, 6½ mm. Expanse of wings, 13 mm. Abdomen, 3¼ mm.

Niger, facie et linea ante alas et scutellum flavis. Abdominis medio fulvo, segmenti primi basi nigra: pedibus fulvis, coxis et trochanteribus anticis et mediis flavis, posticis fulvis, tarsis posticis tibiarumque posticarum apice nigris.

Head black, transverse, face below the antennæ straw-yellow, jaws yellow, their apices ferruginous, palpi yellow. Antennæ longer than the body, black, the basal joint beneath yellow. Thorax gibbous, black, finely punctured, with two raised lines reaching from the base of the anterior wings, converging to the scutellum, a line before on each side, and a dot before, and beneath the wings, yellow. Scutellum and post-scutellum yellow, metathorax coarsely punctured (as seen under an inch objective), with two raised lines enclosing a space in the form of a Jew's-harp, with the narrow part directed towards the post-scutellum, a raised line also borders the metathorax, the whole of which is rather thickly pubescent with pale hairs. Wings broad, iridescent, and rather thickly set with short black hairs, which are bulbous at the base. Stigma and radius black, the front yellow, squamula and base of nerves yellow, intermediate and internal nerves yellowish. Posterior wings: nerves testaceous yellow, the recurrent nervure issuing from below the middle of the angulated transverse nervure. Legs fulvous, the anterior and medial coxæ and trochanters pale yellow, the posterior fulvous; base of the femora with a narrow black ring, the apical half and the tarsi of the posterior pair black, the ungues of the others testaceous. Abdomen one-fourth longer than the head and thorax, depressed, the sides nearly parallel, a little wider in the middle, the apex obtuse, the first segment and base of second and three apical segments black, the apical half, the second, third, and fourth, entirely fulvous-yellow, the basal segment with a rather widish groove along the centre, the edges of which are raised and rounded off; there are also two raised obtuse prominences, one on each side of the groove, about one-third from the base, and two yellow elliptical depressions, one on each side of the base of the second segment. The whole thickly punctured, and clothed with short depressed hairs.

I captured this species in a field of wheat near Exeter, in July, 1881, and have named it, as a slight mark of esteem and appreciation of the work done in this neglected group of British insects, the *Ichneumonidæ*, by Mr. J. B. Bridgman, of Norwich.

LIMNERIA AFFINIS, *n. sp.*

Length, 5 mm. Exp. 7 mm. Ovip. 1 mm. Antennæ, 4 mm.

Niger, abdomen elongato-clavatus sub-compressus, palpis et mandibulis stramineis, pedibus rufo-testaceis, coxis et trochanteribus anticis et mediis stramineis, posticis nigris, femoribus posticis fuscomaculatis, tibiis albis, ad apicem et basin fuscis, tarsis fuscis.

Black, head transverse, buccated behind the eyes, thickly punctured, mandibles and palpi straw-coloured, the apices of the former ferruginous. Antennæ black, the basal joint yellow or testaceous, beneath. Thorax shagreened, black; scutellum black; metathorax coarsely punctured, divided into six areas, bordered by smooth raised lines. Wings iridescent, and rather thickly set with short black hairs, radius black in front, testaceous, base yellow, intermediate and internal nerves testaceous-yellow, scale straw-colour; stigma dull white, or, in some, pale testaceous; areola with a short petiole, or, in some, sessile. Legs fulvous, claws of the anterior and intermediate tarsi ferruginous; coxæ and trochanters of the anterior and inter-

and apex black; the apical half of the tarsi black. Abdomen elongato-clavate, subcompressed, black above, beneath yellow, with the edges of the segments broadly edged with dark testaceous, merging into black towards the apex; basal segment above smooth and shining for about two-thirds its length, the apical portion thickly but slightly punctured, the sides parallel for about two-thirds, when it grows suddenly wider; second segment twice as long as wide, and about two-thirds longer than the third segment. All clothed with a short whitish pile. Ovipositor testaceous, curved, about one millimètre in length.

I have four specimens of this species: I captured two by sweeping vetches in a field near Exeter, in June, 1881, the others I bred from a hedge at Lydford, on the border of Dartmoor. The description applies to both sexes, as do also the measurements.

This insect in general appearance and colouring might, at first sight, be taken for a a small specimen of Gravenhorst's *Campoplex viennensis*; according to this author's arrangement, it would come in his second section, but naturally it would seem to be nearly allied to *C. viennensis*, on which account I have named it *affinis*.

Exeter: 8*th March*, 1882.

THE BRITISH *PSYLLINA*, WITH CORRECTIONS IN THE SYNONYMY.

BY JOHN SCOTT.

Some attention being now given to this interesting group by several students, perhaps it will not be out of place for me to lay before them a complete list of the genera and species found in the British Islands down to the present time, together with such corrections in the synonymy as have been made since the publication of my Monograph in the Trans. Ent. Soc. for 1876. From the time of the appearance of Dr. Förster's Monograph, in 1848, until lately, no attempt was made to alter or interfere with his arrangement generically or otherwise: probably, this may have arisen from a paucity of observers. In 1877, however, Prof. C. G. Thomson, in his "Opuscula Entomologica," fasciculus, 8, gave a Synopsis of the Scandinavian species, under the title of "Öfversigt af Skandinaviens Chermes-arter," wherein he desires to restore the name *Chermes*, originally given to some of them by Linné; no one, however, of late days has adopted it except Thomson, and whether he will have many followers remains to be seen. His further innovations as regards sections of the genera employed by Förster point in the right direction, and with respect to *Trioza Walkeri*, which he makes the type of a sub-genus, *Trichopsylla*, I would go further and give it generic rank; the structural differences of the elytra alone being a sufficient reason for doing this. Next, Dr. Franz Löw, in his "Systematik der Psylloden," published in the "Verh. z.-b. Ges.," xxviii, pp. 605—609, divided the group into sub-families, and assigned to each division various genera, which are justifiable by the structural characters he points out; thus reducing the whole family into small groups easy of recognition.

The following list, prepared mostly in accordance with Dr. Löw's views, contains all the additions made to the British species since the publication of my Monograph. His sub-families are four in number, viz.:—*Liviinæ*, *Aphalarinæ*, *Psyllinæ*, and *Triozinæ*.

PSYLLINA.

Sub-family. 1. LIVIINÆ.

LIVIA, Latr.
  juncorum, Latr.

Sub-family. 2. APHALARINÆ.

[EUPHYLLURA, Först.
  no British representative.]
RHINOCOLA, Först.
  1. *ericæ*, Curt.
    callunæ, Boh.
  2. *aceris*, Linn.
APHALARA, Först.
  1. *picta*, Zett.
    flavipennis, Först.
    sonchi, Först.
    innoxia, Först.
    alpigena, M.-D.
  2. *nebulosa*, Zett.
    radiata, Scott.
    graminis, Thomson (*nec* Linn.).
  3. *exilis*, Weber et Mohr.
  4. *calthæ*, Linn.
    polygoni, Först.
  5. *artemisiæ*, Först.
  6. *nervosa*, Först.

Sub-family. 3. PSYLLINÆ.

PSYLLOPSIS, F. Löw (*Psylla*, auct. *partim*).
  1. *fraxinicola*, Först.
  2. *fraxini*, Linn.
[CALLOPHYA, F. Löw (*Psylla*, auct. *partim*).
  contains no British species.]
PSYLLA, F. Löw (Geoff., Latr., &c., *partim*).
  1. *pruni*, Scop.
    fumipennis, Först.
  2. *costatopunctata*, Först.
    ferruginea, Först.
    cratægi, Schrk. (*nec* Scop., Först.).
    annulicornis, Boh.
    triozoides, Leth.
    quercus, Thomson (*nec* Linn.).
    puncticosta, Thomson.
  3. *costalis*, Flor.
    nobilis, M.-D.
    picta, Först. ?.
  4. *simulans*, Först.
    pyri, Scott (*nec* Linn., Curtis).?*
  5. *pyricola*, Först.
  6. *pyrisuga*, Först. ?.
    pyri, Schdbg. (*nec* Linn.).
    aurantiaca, Gour.
    austriaca, Flor.
    rutila, M.-D.
    rufitarsis, M.-D.
  7. *peregrina*, Först.
    carpini, Först. ?.
    cratægicola, Flor (*nec* Först.).
  8. *mali*, Schdbg.
    ulmi, Först. (*nec* Linn.).
    æruginosa, Först.
    cratægicola, Först. (*nec* Linn.).
    rubida, M.-D.
    claripennis, M.-D.
    viridissima, Scott.

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* I only discovered that the insect described by me as *Ps. pyri* ought to be referred to the *Ps. simulans*, Först., after receiving specimens of the true species from Dr. F. Löw. As far as the [redacted]

9. *visci*, Curtis.
    - *ixophila*, F. Löw.

10. *cratægi*, Först.
    - *pityophila*, Flor.
    - *oxyacanthæ*, M.-D.
    - *similis*, M.-D. (*partim*).

11. *pineti*, Flor.
    - *similis*, M.-D. (*partim*).
    - *occulta*, Först. ?.
    - *ornata*, M.-D.

12. *rhamnicola*, Scott.

13. *salicicola*, Först.
    - *rufula*, Först.

14. *stenolabis*, F. Löw.

15. *Hartigii*, Flor.
    - *sylvicola*, Leth.

16. *Loewii*, Scott.

17. *hippophaës*, Först.

18. *betulæ*, Linn.
    - *elegantula*, Zett. ?.
    - *ambigua*, Först.

19. *Försteri*, Flor.
    - *alni*, Först. (*nec* Linn.).

20. *alni*, Linn.
    - *fuscinervis*, Först.
    - *Heydenii*, Först.

21. *buxi*, Linn.

22. *spartii*, Guer.
    - *spartiophila*, Först.

[SPANIONEURA, Först.
not yet discovered in Britain.]

[AMBLYRHINA, F. Löw.
contains one species not yet found in Britain.]

[DIAPHORINA, F. Löw.
contains no British representative.]

LIVILLA, Curtis.

1. *ulicis*, Curtis.

ARYTÆNA, Scott (Först., *partim*) = (*Atænia*, Thoms.).

1. *genistæ*, Latr.
    - *ulicis*, Curtis, Scott.
    - *spartii*, Hartig.

[FLORIA, F. Löw.
contains no British representative.]

[ALLŒONEURA, F. Löw., = (*Arytaina*, Först., *partim*).
contains no British representative.]

[HOMOTOMA, Guér., = (*Anisostropha*, Först.).
contains no British representative.]

Sub-family. 4. TRIOZINÆ.

TRICHOPSYLLA, Thoms.

1. *Walkeri*, Först.

TRIOZA, Först.

1. *urticæ*, Linn.
    - *eupoda*, Hartig.
    - *forcipata*, Först.
    - *protensa*, Först.
    - *crassicornis*, Först.
    - *bicolor*, M.-D.

2. *viridula*, Zett.
    - *simplex*, Hartig.
    - *apicalis*, Först.

3. *galii*, Först.
    - *velutina*, Först., Flor. ?.
    - *thoracica*, Flor. ?.

4. *acutipennis*, Zett. (*nec* Först.).
    - *Saundersi*, M.-D.

5. *remota*, Först.
    - *cinnabarina*, Först.
    - *hæmatodes*, Först.
    - *dryobia*, Flor.

6. *salicivora* (Reuter), Scott.

7. *albiventris*, Först.
    - *sanguinosa*, Först.

8. *munda*, Först.
    - *munda*, Flor.

9. *rhamni*, Schrk.
    - *abieticola*, Först.
    - *argyrea*, M.-D.

10. *abdominalis*, Flor.

11. *Dalei*, Scott.

[BACTERICERA, Puton.
not yet discovered in Britain.]

I may add that I do not hold with Dr. F. Löw in the position he assigns to the genera *Livilla* and *Spanioneura* in his sub-family *Psyllinæ*. Although the neuration of the elytra of the former is similar to that of *Psylla*, yet the peculiarity of the form and length of the face-lobes seem to indicate that it ought to be dealt with as a member of a sub-family, to be called *Livillinæ*. As for the latter (*Spanioneura*), it is somewhat remarkable in its structure, partaking, as it does, of the characters of *Psylla* and *Trioza* combined. From *Psylla* it differs in having lanceolate elytra, as in *Trioza*; and from *Trioza* in having a petiolate cubitus, as in *Psylla*. Here, also, I think are sufficient grounds for the formation of a new sub-family, under the name of *Spanioneurinæ*.

In the "Meddel. af Soc. pro Fauna et Flora fennica," 5 (1880), Dr. O. M. Reuter, in his enumeration of the *Hemiptera* of Åbo and Åland, observes the nomenclature of Dr. Löw in respect of the *Psyllina*, which are mostly the same species as in Britain.

Lee, S.E.: *2nd January*, 1882.

ENTOMOLOGICAL NOTES FROM TENERIFFE, ST. VINCENT, &c.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

We arrived at Teneriffe on the 17th December, and on the following afternoon I went for a walk, taking the road from Santa Cruz towards Laguna, in the interior, the ancient capital of the island. The country passed through was very rough, dry, and rocky, the small fields being divided by loose stone walls, reminding one of Malta. The only things under cultivation, at this time of the year, appear to be spring onions and prickly pears. There were a great many acres of the latter, which are grown for the purpose of rearing the cochineal insect. In one place there were a number of women busily engaged covering the leaves with muslin. The parent insects, so I was told, are kept in sheds, built for the purpose, and deposit their ova on the muslin, which is then cut into pieces about six inches square. These pieces are then wrapped round a leaf of the prickly pear, and their ends fastened to the leaf with the sharp thorns picked from the plant itself. The little creatures when they are hatched crawl from the muslin on to the leaf, and the muslin afterwards serves as a protection from wind and rain. The insects take three or four months coming to maturity, when they are shaken off, baked, and dried, and are then

Laguna is some 2000 feet above Santa Cruz, from which it is distant about seven miles, so it was uphill work, and, as I did not feel inclined to go the whole way, I stopped, after walking about four miles, and rested, and admired the beautiful view, and then returned to the town. As I did not expect at this time of the year to see any insects about, I took no net with me, so, in consequence, noticed many large dragon-flies, two or three *Macroglossa stellatarum*, and a number of *Pieris Daplidice*, and also picked up an uninteresting-looking *Noctua* larva, much resembling that of *Agrotis exclamationis*,* crawling on the dusty road. The next morning I landed with one of my brother officers for a drive to Laguna, and upon reaching the mole, we found a carriage which we had previously ordered waiting for us. It was a queer-looking conveyance, of ancient date, and had three horses attached to it abreast. The day was simply perfect: cloud and sunshine, the latter preponderating, with a deliciously balmy breeze. The road between the two towns was a capital one, and our three little horses took us along merrily, although it was uphill the whole way. We reached Laguna about half-past one, and found it a dreary, dirty-looking town, with much grass growing in the wretchedly-paved streets. After driving about in the town for a short time, we went right through and found the country beyond flat and well cultivated, and in some places looking beautifully green. We drove on for about a mile between something almost like hedges, and then stopped, got out, left our carriage in the road, and walked about for an hour or so. I put my net together at once, and had only just done so when a brown butterfly flitted by, and was netted, and I was pleased to find that I had captured a fine *Lasiommata Xiphia*, and seven others were soon obtained. They were evidently just coming out, for they were quite fresh and in beautiful condition. Besides these, *Pieris rapæ* and *Daplidice* and *Chrysophanus Phlœas*—the latter with much larger black spots than in British examples—were taken, and several *Pyrameis cardui* seen. The country this side of Laguna was very pretty, and after walking on until we could see the sea the other side of the island, we returned to our carriage and drove back to Santa Cruz.

On 24th December, we arrived and anchored off the estuary of the river Ouro, on the West Coast of Africa, in lat. 23°, 40′ N., and remained until the 29th. This locality, I expect, has never been visited by an entomologist; and from the ship, entomologically speaking, the aspect was most desolate, nothing as far as the eye could reach but sandy desert—in fact, the great Sahara. While here I went on shore several times shooting (birds were very numerous), and found the country was no better than it appeared from the ship: stunted bushes of mesembryanthemum, saltwort, stonecrop, &c., grew at intervals on the sandy beach, and on the desert beyond, the same plants, in a more dwarfed form, and a few others I did not know, occurred. A diligent search at the roots of these plants resulted in the discovery of one small beetle (a *Dermestes*) and the larva of another (*Cicindela*), and a few larvæ of an Orthopteron. But a large dragon-fly (*Anax* [*Cyrtosoma*] *ephippiger*) occurred in the greatest profusion, which is strange when one bears in mind that these insects in their larva-state pass their existence in fresh water, of which there were no signs whatever in the neighbourhood, nor had there apparently been any rain for months. The river Ouro seems to be a river in name only, for an exploring party from the ship which went to the head of the estuary—some twenty miles or more inland—could discover no trace of fresh water. These dragon-flies flew off to the ship in considerable numbers, and at night might be seen reposing on the various ropes. One evening, shortly before dusk, I landed on the sand-ridge, at the mouth of the estuary, and found the dragon-flies had congregated in vast numbers on the bushes, and I noticed that they invariably selected the branches to leeward of the bush.* Only one species of butterfly, the ubiquitous *Pyrameis cardui*, was noticed. No traces of the ordinary food-plants were visible. Three different kinds of moths were obtained: a fine *Chœrocampa celerio* at rest (the larva of this insect feeds, I believe, exclusively upon vine); *Heliothis armiger*, whose larvæ I have taken feeding in flowers of thistles and henbane ; and an *Agrotis*, near *ripæ*, whose larvæ, probably, feed on *Sedum*, and other plants growing on the sands.

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* On the 16th January this larva produced a fine *Agrotis*, unlike any species with which I am acquainted.

We left the river Ouro on 29th December, and arrived at St. Vincent, Cape de Verde islands, on the afternoon of 2nd January. From previous accounts I had had of the island, I expected to find nothing but a barren, dry rock, so was agreeably surprised to see an abundance of green scrub to the westward of the town, and plenty of green and golden patches among the hills. The next day I went on shore, and walked out to the westward of the town, where I found that the scrub was composed chiefly of tamarisk with mimosa and cassia, and several other trees and shrubs I did not know. The golden-

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green patches were caused by a densely growing *Sedum*, whose bright yellow and sweetly smelling flowers were just coming into bloom. There were also large patches of *Chenopodium* growing luxuriantly among the tamarisk and elsewhere, and near the shore *Suæda maritima* and *Beta maritima* in plenty. Among the *Chenopodium*, a *Pyrale*, which seems identical with a species I have taken in Peru, was abundant, and I also obtained a single example of another species of *Pyrale*, which I have likewise taken both in Brazil and Peru. Unfortunately, it was a dull afternoon, with frequent misty showers, and only a gleam of sunshine at rare intervals, and a strong breeze blowing. It always blows here, I believe. During the gleams of sun, I noticed two kinds of butterflies: a *Pieris*, which looked uncommonly like *rapæ*, and which I missed shamefully several times, and two specimens of an obscure little *Lycæna*. Among the *Chenopodium* I obtained five small and prettily marked *Pterophori*, and from the tamarisk bushes a plume which appears to be identical with *Agdistis Bennettii.** Among the same bushes there were numbers of a dull coloured *Scoparia*, and a very small whitish *Tinea*, but the moment they were dislodged with the beating stick, they were blown away by the strong wind, and I was only able to secure a couple of them. Two species of dragon-flies were plentiful, but also, on account of the wind, difficult to catch, and I obtained but two—one possessing a bright claret coloured body, and the other dull golden-green—perhaps, sexes of the same species. Besides the moths mentioned above, I secured a pretty little yellow *Noctua*, allied to *Micra*, and two species of *Geometer*. In the seed-pods of *Cassia*, a *Tortrix* larva was plentiful, and I gathered a couple of dozen of them.† *Coleoptera* and *Hemiptera* were very scarce, but *Orthoptera* were abundant, and I noticed many species, besides hearing them all around me. The *Hymenoptera* were represented by a single large, dark blue, ichneumon-like insect, having large, bright yellow antennæ, which made it very conspicuous on the wing. They were busy collecting honey from the flowers of the *Sedum*. We left St. Vincent on the 4th January for Cape of Good Hope, where we shall remain for about a fortnight, and then proceed to Australia.

H. M. S. "Espiègle," at Sea:
27th January, 1882.

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* *A. tamaricis*, ?.—Eds.

† I placed these pods in a large wide-mouthed bottle, and in a day or two observed many of the larvæ had crawled to the sides of the bottle and were hanging, dead, and, upon examination, I found all the pods covered with mildew, and every larva dead. One which I placed in a small pill box by itself, for the purpose of figuring, spun a cocoon of fine white silk, and on the 25th January produced a moth.—G. F. M.

Note on Acherontia Atropos in Caithness.—In March, 1877, a correspondent of the Ent. Mo. Mag. made enquiry about the occurrence of *Acherontia Atropos* in Caithness. In the Ent. Mo. Mag. for the following month I mentioned the only instance then known to me. Perhaps it may interest Mr. Sandison to hear that it has been taken twice since then, and on both occasions by chance observers. In August, 1877, a specimen was found at rest in the daytime in a grass field adjoining one of potatoes, at Billster, near Wick; and in August, 1879, another was startled out of ivy at Barrock House, in the parish of Bower. No doubt the insect occurs occasionally throughout the county.—L. D. Dunbar, Wick, N.B.: *Feb. 17th*, 1882.

Further note on Tortrix Lafauryana.—I have just had the pleasure of examining a series of variations of both sexes of *Tortrix Lafauryana*, Ragonot, kindly lent for the purpose by Mr. Atmore, and am able to add a few words to my note on the species (*ante* p. 17). In the males the range of variation here seems to be from the usual yellowish or pale ochreous colour to a bright fulvous, the markings slightly darker, or even almost obliterated. Females either very pale ochreous, greyish-ochreous, or dull brownish-red, in all cases having the fore-wings crossed by numerous irregular, delicate, faintly darker lines, something as in the female of *Lozotænia rosana*, giving the wings a faintly reticulated appearance. This also occurs, but more faintly, in the males.

By good fortune, at the same time, my old friend, Mr. Machin, has sent me a pair of *Tortrices* reared by him from *Statice limonium*, which are clearly *L. latiorana*, Wilk. (a variety of *L. costana*), the female of which resembles the paler females of *Lafauryana* in shape, size, and colour, but is entirely destitute of the delicate reticulations of that species, and is thus easily distinguishable.—C. G. Barrett, Pembroke: *February 25th*, 1882.

On the colouring matter, &c., of cocoons of some of the silk-spinning Lepidoptera.—I have been much interested in reading an article in the "Journal of Science" for last month (February, 1882), by Mr. J. W. Slater on "Silks and Silkworms," and my attention was especially caught by the part where the statement of Major Coussmaker, who has studied the large Indian silk-spinning larvæ, is quoted to the effect that by opening cocoons at various intervals he had convinced himself of the fact "that when the caterpillar has left off eating and begins to spin, it voids the food remaining in the alimentary canal, first of all in a more or less solid form and of a dark colour, but after it has become fully enveloped in the cocoon, the excrement comes away as a light-coloured liquid, the hue and consistency of which depend upon the amount of vegetable matter not previously evacuated, and the amount of lime, carbon, and ammonia present:" and he considers the use of this excrementitious deposit is to harden the cocoon, but at the same time it stains the silk, and it is from this point of view chiefly that he takes notice of it. Now to me at first, when I recollected the invariable habit of larvæ to empty the intestine of food before commencing the cocoon, this statement seemed sufficiently startling; but presently the yellow powder in the cocoon of *Clisiocampa neustria* came to mind, and could not be accounted for as emanating from the spinnerets of the larva; so I turned to proceed to give the explanation that these larvæ, "after spinning their cocoons, cast from their anus three or four masses of a soft and paste-like matter, which they apply with their head all round the inside of the cavity, and which, drying in a short time, becomes a powder that effectually renders it opaque. This is not as might be expected an excrement, but a true secretion, evidently intended for this very purpose, and according to Réaumur, a similar powder, but white, derived from the varicose intestines, is used by the caterpillars of *Gastropacha quercifolia*, &c." And I find in Boisduval's introduction to the first vol. of "Lépidoptères, Suites à Buffon," the following passage: "Il en est qui, pour rendre leur coque plus ferme et moins transparente, l' humectent d'une liqueur jaune qu'elles rendent par l'anus, et qui, en se desséchant, devient pulvérulente comme du lycopodium ou de la fleur de soufre (*Bombyx neustria, franconica, castrensis*, &c.)"

Besides the powdery cocoon of *C. neustria*, I had bethought myself of the varnished cocoon of *Saturnia carpini*, and on this point also I find something in Kirby and Spence, for they quote a conjecture of Réaumur that the threads of which it is made are connected by a "gummy matter from the anus, with which the whole interior of the cocoon is often plastered."

I have myself bred very few indeed of the large Oriental silk-spinners, and I have not sufficient physiological knowledge to speak with anything like authority on the substances other than silk, which are found in the cocoons of the above mentioned British species, but I must say of the two explanations given I prefer the one which attributes them to a secretion, to that which gives them an excrementitious origin. Perhaps there may be some one who has investigated this subject recently, and can settle it for us; if not, it seems sufficiently interesting to be examined anew, and I shall be glad to help any one able and willing to make experiments.

The cocoons of some of the ichneumous, as noticed by Kirby and Spence, offer curious examples of variation in the colour of silk, which must all come from the same source; some of these cocoons are regularly *banded* in two colours, others, as Mr. Parfitt made me observe, are *spotted*, and some I have seen almost *streaked*; here would be another interesting subject for examination by a competent student.—J. Hellins, Exeter: 10*th March*, 1882.

Corticaria Wollastoni at Mablethorpe, &c.—Last summer I took on the sand-hills at Mablethorpe, Lincolnshire, several specimens of a *Corticaria* which I thought might be *Wollastoni*, Waterhouse, as it seemed strange, and I knew that Mablethorpe was the place where Mr. Wollaston took the specimens from which the insect was named; on comparing my specimens with the type specimen of *Wollastoni* given me by Mr. Matthews, I found that they were identical. I sent, however, one of my specimens to M. Brisout de Barneville, who returned it to me as *C. transversalis*, Gyll., a species very common on the continent, and apparently one of the most variable of the genus. I find that Reitter, in his Monograph, has already merged *Wollastoni* into *transversalis* as a variety; and although he has done this only from descriptions, and owns that *Wollastoni* is unknown to him, yet there would seem to be little doubt but that he is right. The following continental species, that have at one time or other been described, are all now included under *transversalis*: *brevicollis*, Mannh., *maura*, Mots., *hortensis*, Mannh., *Wollastoni*, Waterh., *suturalis*, Mannh., *crocata*, Mannh., *taurica*, Mannh., *curticollis*, Mannh., *pallens*, Mannh., *moravica*, Reitter, *albipilis*, Reitter, *sericea*, Mannh. This fact will show how variable the species is.

Our *C. curta*, first described by Mr. Wollaston (Ins. Madeira, 1854), appears to be the same as *C. fulvipes*, Comolli, described in 1837; the latter name, therefore, has priority.—W. W. Fowler, Lincoln: *March 9th*, 1880.

Oryctes nasicornis at Wick.—Will any correspondent, who knows of the capture of the continental *Oryctes nasicornis* in Britain, tell me when and where it occurred? In May, 1879, between the 18th and 31st, a female *O. nasicornis* was taken crawling on the South Head Braes, Wick, and brought to Mr. Sinclair, watchmaker, by whom it was given to me. As it is common in gardens, tan pits, &c., in northern and middle Europe, it doubtless came in the ballast of one of the many vessels which trade between the Baltic ports and Wick. Mr. E. C. Rye kindly named the insect for me shortly after it was taken.—L. D. Dunbar, Wick, N.B.: *February 17th*, 1882.

Notes on captures of British Aculeate Hymenoptera.—I should be glad if you would allow me space to record the following captures of some of our rarer British Aculeate *Hymenoptera*. The species mentioned were taken some years ago, before I first left England, and I only call attention to them now because I find that the localities here given for the *Fossores*, &c., have not been mentioned by Mr. E. Saunders in his Synopsis, and as some are for species of considerable rarity, I thought it was a pity that they should be forgotten; I have also added localities for several rare wasps and bees, and would especially call attention to the capture of *Odynerus basalis* on Stowborough Heath, Dorset, for although my kind old friend, the late Mr. F. Smith, described and figured it in the Entomologist's Annual for 1869, he, in some unaccountable way, omitted it from his Catalogue published in 1871. It has, I believe, been subsequently taken by Mr. C. W. Dale, also in Dorsetshire.

Formica sanguinea, Shirley, Croydon, common, one nest in the post of an oak paling sunk in the ground; *aliena*, Bournemouth, ♂ ♀, July. *Myrmica lobicornis*, *Leptothorax acervorum* and *Nylanderi* (a few specimens), Shirley, Croydon, in nest of *F. sanguinea*, common. *Tetramorium cæspitum*, Shirley. *Mutilla europæa*, Croydon and Bournemouth; *rufipes* = *ephippium*, entirely black var. of the ♂, one specimen, Sandown Bay. *Aporus bicolor*, four ♂, three ♀, Steephill, Ventnor, July, 1871, first recorded capture of the ♂ in this country.* *Agenia variegata*, Steephill, Ventnor, July. *Pompilus agilis*, Ventnor. *Tachytes unicolor*, Ventnor. *Crabro capitosus*, Ipswich, bred from bramble-sticks. *Eumenes coarctata*, Bournemouth and Stowborough Heath. *Odynerus basalis*, ♀, first captured on Stowborough Heath, Dorset, 24th July, 1878. *Vespa norvegica*, Shirley. *Andrena Hattorfiana*, Ventnor; *spinigera*, Shirley; *austriaca*, = *rosæ*, Shirley; *simillima*, Ventnor. *Cælioxys 4-dentata*, Ipswich, common. *Osmia bicolor*, Riddlesdown, near Purley, May; *pilicornis*, Shirley, 1 ♀. *Nomada baccata*, Bournemouth; *armata*, Ventnor. *Stelis phæoptera*, Addiscombe, not uncommon. *Ceratina cyanea* = *cærulea*, Croydon, bred from bramble-sticks. *Bombus soroensis*, ♂ and ☿, Croydon and Ipswich.—G. A. James Rothney, 84, Anerley Park, Penge, S.E.: *9th March*, 1882.

Note on Trioza crithmi, F. Löw, a species of Psyllidæ not yet known as British.—Where "hangs (out) one that gathers samphire?" If there be such an one, he is the very person to direct the footsteps of the naturalist to the head quarters of this insect, discovered by Dr. Puton on the sea coast in Brittany some time ago, and who wrote to me immediately after its capture, saying, that it was certain to be found in England where the plant grew. I hope some enterprizing individual will try and obtain the species, and be good enough to send me living examples, together with a small portion of the food-plant, for the purpose of figuring. Nothing is, I believe, as yet known of its earlier stages, and the young forms would prove of much greater interest than the adults.—JOHN SCOTT, Lee, S.E.: *March 12th*, 1882.

Note on some fungi that attack insects, &c.—*Isaria arachnophila* is parasitic upon dead spiders, *I. farinosa* on dead pupæ, *I. sphingum* on dead moths. These creatures are, however, first attacked whilst living. The genus *Isaria* is supposed to be a sort of conidophorous, or larval, condition of the genus *Torrubia* (or *Cordyceps*) amongst fungi. Several British species of this latter genus grow on the larvæ or pupæ of moths, one grows on an ichneumon, and another (*Cordyceps sphærocephala*) upon living wasps in the West Indies; this last species seems to have no place at present in the lists of British fungi, yet it seems probable that the fungus now exhibited growing from the body of a bee, is no other. The bee was caught in this country whilst it was inconveniently flying with its fungus burden.—WORTHINGTON G. SMITH (extracted from a paper read at Sci. Committee R. Hort. Soc., *14th March*, 1882).

Review.

REPORT OF THE ENTOMOLOGIST OF THE UNITED STATES DEPARTMENT OF AGRICULTURE FOR THE YEAR 1880. By J. HENRY COMSTOCK. With Illustrations. Washington: Government Printing Office. 1881. (Author's Edition) pp. i—iv, 235—373.

The primary object of this Report is to give notes on insects injurious to various plants or crops in America, with indication of the remedies, and in this respect is likely to be beneficial; but it has a wider interest for Entomologists in the accounts of the natural history of the insects noted, and in the descriptions of new species. The Report is divided into three parts: 1, Miscellaneous Insects; 2, Report on Scale Insects; 3, Report on the Parasites of the *Coccidæ*.

The first part is mainly devoted to *Lepidoptera* from an economic point of view, and three new species are described: *Pempelia Gleditschiella*, Fernald, from leaves of the honey-locust; *Grapholitha bracteatana*, Fernald, from cones of *Abies bracteata*; and *Botys repetitialis*, Grote, from cauliflowers. Two other new insects are also described—*Diplosis catalpæ*, Comstock, and *Entedon diastatæ*, Howard. Plates i and ii belong to this part.

Part 2. This consists of a Report on *Coccidæ*, preceded by an introductory notice, in which are well and concisely given their characters and metamorphosis, to which are added statements of methods for the destruction of these very injurious insects, the preference being given to a solution of soap, the author saying—"The results were so remarkable, that I feel warranted in saying that, taking into consideration its efficacy as a means of destroying scale-insects, its effect upon plants, and its cost, there is at this time no better remedy than a strong solution of soap. In my experiments whale-oil soap was used, and the solution was applied by means of a fountain-pump to orange trees infested with the red scale of California. In the strongest solution used the proportions were three-fourths of a pound of soap to one gallon of water. The mixture was heated in order to dissolve the soap thoroughly; and the solution was applied while yet heated to about 100° F. The tree upon which the experiment was made was very badly infested, the bark of the trunk being literally covered with scales. Four days after I examined the trees very carefully, and could find no living insect on the trunk, and only a small proportion of the Coccids on the leaves appeared to be still alive. Three months afterwards Mr. Alexander Craw made a careful examination of this and some other trees upon which we had experimented, and on this one he was unable to find any living scale insects."

Pages 292 to 349 are occupied with descriptions of species, some of which are well-known European forms, some American, previously known, and more new and now first described and figured. Plates iii to xxii are devoted to the *Coccidæ*.

Part 3 is a Report on the Parasites of the *Coccidæ*, contributed by Mr. L. O. Howard, in which the fostering of them with a view to their beneficial action in lessening the number of *Coccidæ* is shown to be practicable and is advocated. Thirty-four species (*Chalcididæ*, *Proctotrupidæ*) are described, most of them being new, and Plates xxiii and xxiv are filled with figures of them.

Altogether this is one of the best of the Reports by the State Entomologists of America we have seen.

Obituary.

Sir Charles Wyville Thomson, LL.D., F.R.S., died at his residence, Bonsyde, Linlithgow, on the 10th March, at the age of 52.

In early life he collected British *Lepidoptera*, and there is a communication from him in the 4th volume of the Entomologist's Weekly Intelligencer, p. 117, on the occurrence of "*Anthrocera Minos* in the West of Scotland."

Professor Wyville Thomson was then (1858) at Queen's College, Belfast, where he remained till 1870, when succeeding Professor Allman in the Chair of Natural History in the University of Edinburgh, he entered on a wider sphere of usefulness.

His connection with the "Challenger" expedition as head of the Scientific Staff is well known. Leaving England in 1872, they were away three years and a half; on his return from that voyage in 1876 he was knighted.

Unfortunately, he seems never to have enjoyed good health after his return from this expedition. In June, 1879, he had an attack of paralysis, and from that time he could only work at occasional intervals, and towards the end of last year he resigned his Chair at the University of Edinburgh, and latterly he found himself physically unable to continue his personal superintendence of the volumes which have yet to appear relating to the expedition.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ*.

BY R. H. MEADE.

(*continued from page* 224.)

16. HYLEMYIA, R. Desv.

Gen. ch.—Eyes bare, contiguous or sub-contiguous in the male; arista plumose, or sub-plumose; alulets small, with scales of equal size; abdomen usually prolonged with five segments, conico-cylindrical, or oblong flattened and narrow; the ventral surface often furnished with tufts of hair, and the anal male appendages prominent: wings with the third and fourth longitudinal veins parallel, or slightly divergent; anal vein prolonged to the margin: legs simple.

Sect. 1—*Legs wholly or nearly black.*

Div. i—*Arista long haired.*

1. HILARIS, Fall.
2. VIRGINEA, Meig.
3. VARIATA, Fall.
4. LASCIVA, Zett.
5. FLAVIPENNIS, Fall.
   crassirostris, Meig. ♀.

Div. ii—*Arista short haired.*

6. SETICRURA, Rond.
7. CARDUI, Meig.
   brunnescens ?, Zett.
8. NIGRESCENS, Rond.
9. PULLULA, Zett.
   longula, Meig. non Fall.
10. CINERELLA, Meig. non Fall.
11. CINEROSA, Zett.
12. ANTIQUA, Meig.

Sect. 2—*Legs more or less pale.*

Div. i—*Arista long haired.*

13. STRIGOSA, Fab.
    vulgaris, Panz.
14. NIGRIMANA, Meig.
15. PRÆPOTENS, Wdm.
16. PUELLA, Meig.
17. OPEROSA, Meig.
18. COARCTATA, Fall.

Div. ii—*Arista short haired.*

19. TIBIARIA, Rond.
    ceparum ?, Meig.
    antiqua ?, Schin.

The distinctive characters between the species in this genus, and those in *Hydrophoria*, are somewhat difficult to define; the only positive point of difference being the comparative size of the scales of the alulets, which are unequal in size, and larger in proportion, in *Hydrophoria* than in *Hylemyia*. Schiner has repudiated the genus Hydro-

phoria altogether, placing *H. conica* and *H. linogrisea* in *Hylemyia*, and removing *H. divisa* into the unspotted division of his genus *Spilogaster* (*Mydæa*). While, however, some of the more highly developed species of this genus are closely related to some of those in *Hydrophoria*, many of the others are very feebly organized, having very small alulets and narrow flattened bodies.

The arista should always be distinctly plumose or hairy in all species placed in this genus, but there are a few in which the hairs though distinct are short, and some of these have been placed by one author in one genus, and by others in another, thus creating a good deal of confusion: *H. antiqua* and *pullula*, for instance, are included by Schiner in his great genus *Anthomyia*, along with *H. cardui*; while Rondani places them more correctly in the present genus.

H. HILARIS, Fall.

This fine well-marked species is rare. I have only seen one British example, which was sent to me by Mr. B. Cooke, of Southport.

H. VIRGINEA, Meig.

This large species is also rare. I captured a single male in August, 1873, at Tingewick, near Buckingham. The legs, though black, have all the knees as well as the bases of fore tibiæ pale.

H. VARIATA, Fall.

This little species, which abounds everywhere, may be recognised by its narrow conico-cylindrical abdomen, marked by a slender longitudinal dorsal stripe, which becomes attenuated towards its extremity; and by the arista being furnished with very long but few hairs. The thorax is striped by three, or rather five longitudinal black bands, which are more distinct in the female than in the male. The forehead is prominent, the eyes contiguous behind in the latter sex, but rather widely separated in the former, the frontal space being rufous at its fore part.

H. LASCIVA, Zett.

This species is almost as common as the last, and is often confounded with it; it differs, however, by being rather smaller, much blacker, and more hairy. The thorax is indistinctly striped; the abdomen is flat and oblong, not conical; the sub-anal processes are much larger; the dorsal stripe is wide and of equal width over each segment, except the last, on which it is indistinct; the head is round, and the forehead less prominent than in *H. variata*; the arista is very similar.

Length, about 4 mm. (2 lin.).

H. FLAVIPENNIS, Fall.

In this species the arista is long and thickly haired; the proboscis is thick and is dark grey, cylindrico-conical, hairy, with an interrupted dorsal stripe, formed by three widish tapering black spots; the wings are of a brownish-yellow colour, more intense at the base; the hind tibiæ of the males are clothed along their front and inner surfaces with soft hairs of moderate length. The female has the frontal space black, and the abdomen nigrescent and immaculate. Rather local, not uncommon in Yorkshire, and I have received it from Mr. Dale, in Dorsetshire.

H. SETICRURA, Rond.

This well-marked species has only been described by Rondani. It is characterized by the arista being rather shortly but thickly haired; the face slightly prominent; the eyes of the male contiguous; the proboscis thick, as in *H. flavipennis*; the thorax yellowish-grey, with five longitudinal stripes; the abdomen oblong, flattened, very hairy, ash-grey, with a narrow longitudinal stripe; the sub-anal appendages of the male large, and furnished in front with two projecting hairy lobes; the wings sub-luteous; the legs spinous; and the hind tibiæ thickly armed with long rigid hairs, or fine bristles, along the whole of their inner and front sides. The females, which were unknown to Rondani, have the eyes separated by a wide space, having a central red stripe, bordered by a white margin on each side about half the width of the stripe; the thorax marked as in the male; the abdomen brownish-grey, conical, hairy, and immaculate; the wings nearly colourless, strongly ciliated along the front half of the costa, and with a long costal spine (the costa is nearly smooth in the male). The legs are spinous. Generally distributed.

Length of both sexes, about 6 mm. (3 lin.).

H. CARDUI, Meig.

The diagnosis of this species is involved in a good deal of obscurity. It was not known to either Zetterstedt or Rondani; the former, however, probably confounded it with his *A. brunnescens*, for the descriptions of the two species correspond pretty closely, and in his last volume he remarks that Dr. Winnertz in 1856 sent him a specimen of *A. brunnescens* under the name of *Anth. cardui*, Meig.

I have not seen a typical example of *H. cardui*, but shall give a short account of the British species, which appears to me to correspond most closely to the descriptions given by Meigen and Schiner of that insect.

Eyes of male sub-contiguous; face sub-prominent, white with brown reflexions; epistome unprojecting; arista with short hairs, and having a shining black, short, oval prominence at its base; thorax brownish-grey, with greyish-white sides, marked with three longitudinal black stripes, one central, straight, diminishing in breadth from before backwards, and two lateral, sinuous and irregular; the stripes are separated by two rows of bristles, which give the thorax the appearance of being five striped; addomen long, narrow, depressed, and hairy, with the second segment prolonged, ash-grey with black reflexions, marked with a black interrupted longitudinal dorsal stripe, and transverse lines; the sub-anal process of the male is furnished with two projecting lobes, and there is a tuft of shortish black hairs on the under-surface of the middle abdominal segment; wings yellowish-brown, the third and fourth longitudinal veins parallel to each other behind the external transverse vein; fore tibiæ with one bristle projecting from the middle of the external surface, in addition to the apical ones; hind tibiæ with a few short bristles on their inner surfaces, and five or six longer ones, of even lengths, arranged along the outer sides, at nearly equal distances from each other. I do not know the female.

Length of male, 6 mm (about 3 lin.).

This species seems local. I captured a number of specimens near Risborough, in Buckinghamshire, in June, 1879, but have not met with it in any other locality.

H. NIGRESCENS, Rond.

This species closely resembles the last, and may easily be confused with it; it is, however, distinct, and may be known from *H. cardui* by the following points of difference: the eyes of the male are contiguous, the epistome slightly prominent, the arista has rather shorter hairs, and has a slightly prolonged thickening at the base instead of a bead-like prominence, as in *H. cardui*; the thorax is indistinctly striped and less white on the sides than in *H. cardui*; the third and fourth longitudinal veins of the wings are slightly divergent; the fore tibiæ are without any spines on their outer surfaces, besides the apical one; the hind tibiæ are more spinous externally than in *H. cardui*, and the spines are placed in irregular order. The female is unknown. Rare. I have two males captured in the neighbourhood of Bradford, and have received typical specimens from the continent.

H. PULLULA, Zett.

This little species may be known from all the others in the genus by the transverse veins of the wings being slightly clouded with black. Not uncommon.

H. CINERELLA, Meig.

This species is quite distinct from the *M. cinerella* of Fallén, with which Meigen confounded it; the latter species has the arista nearly bare, and belongs to the genus *Chortophila*. The present insect has the arista distinctly plumose, though rather short-haired; the face is somewhat prominent; the eyes of the male sub-contiguous; the dorsum of the thorax blackish-brown, with an indistinct central stripe, and an irregular black line on each side, below which the sides are of a grey-white colour; the scutellum is pale grey; the abdomen is long, narrow, and conical, grey, with a narrow longitudinal dorsal stripe; the hind legs are long, with the tibiæ spinous; a few short spines being situated on their inner sides in the middle. Rare. I have three males which were found near Bradford, and I have also received it from Austria.

H. CINEROSA, Zett.

This, though supposed by Zetterstedt to be the same as the *A. cinerella* of Meigen, is quite distinct. The face is less prominent; the thorax (with the scutellum) is of an uniform greyish-brown colour; the sides are pale, but are not separated from the dorsum, as in the former species, by a black line; the abdomen is oblong and flattened, of a dark grey colour, and marked on the dorsum with four wide sub-confluent triangular black spots, instead of with a straight narrow line; the hind legs are proportionately shorter than in *H. cinerella*, and the hind tibiæ are clothed on their inner sides with soft hairs instead of bristles; the wings are

H. ANTIQUA, Meig.

This rare species, of which I have seen but one British example, has been confounded with several others. It is shortly but clearly described by Meigen (vol. v, p. 166). The thorax is yellowish-grey with white shoulders, and is unstriped; the abdomen is flattened and elliptical, ash-grey, with a very fine, straight, sub-interrupted dorsal black line; the hind tibiæ are spinous. I have typical continental specimens of this fly named by the late Professor Rondani.

H. STRIGOSA, Fab.

This is common everywhere in woods; it has the tibiæ only piceous in the males, and the femora, as well as the tibiæ, pale in the females.

H. NIGRIMANA, Meig.

This species closely resembles the last, but is usually rather larger, and has the four posterior femora of the males, as well as all the tibiæ, pale. The females are difficult to distinguish from those of *H. strigosa.* Generally distributed, but not common.

H. PRÆPOTENS, Wdm.

This fine species has all the femora and tibiæ yellow in both sexes; the anal segment of the abdomen, as well as the sub-anal male appendages, are also yellow; the wings have the third and fourth longitudinal veins strongly divergent, and the external transverse veins very oblique and sinuous. Rare.

H. PUELLA, Meig.

This species closely resembles *H. virginea,* but has all the tibiæ testaceous, while in *H. virginea* only the bases of the fore tibiæ are pale. These two species are probably only varieties of the same. Rare.

H. OPEROSA, Meig.

This species, of which I only know the female, is characterized by having the thorax, which is brown, marked by two wide irregularly (maculiform) shaped lateral stripes, and two narrow central lines, the sides being cinereous; the abdomen is conical, grey, and has a central dorsal stripe; the legs have all the femora black, but the tibiæ testaceous in both sexes. The female has the intraocular space black, except at the front margin, where it is red. Length, 4 mm. (about 2 lin.).

This fly, which is rare, bears a strong resemblance to *Hydrophoria conica,* but is much smaller and has little alulets.

H. COARCTATA, Fall.

This is a well-marked species; the arista is furnished with hairs of medium length; the males have the thorax grey with the sides lighter, and the dorsum indistinctly striped; the abdomen hairy, oblong, narrow, flat, and cinereous, with an indistinct narrow dorsal stripe; anal segment grey, sub-anal appendages hairy, with two black lamellæ; wings with yellow veins; legs black, with pale tibiæ. The females have both the thorax and abdomen pale ash-grey, and immaculate, and the four posterior femora, as well as all the tibiæ, pale. Not common. I found several specimens in the neighbourhood of Edinburgh in August, 1875, and have received it from Mr. B. Cooke, of Southport.

H. TIBIARIA, Rond.

This peculiar species bears a very strong general resemblance to *H. cardui* in the colour, shape, and markings of the thorax and abdomen. It differs in having the arista rather longer haired; the tibiæ all piceous or testaceous, and above all in having the abdomen furnished in the middle of its ventral surface with a tuft of black hairs, so long that it extends in a curved direction backwards as far as the apex of the abdomen, and even sometimes beyond it.

Length, 7 mm. (about 3¼ lin.).

The female is unknown. Not common. I have captured it at Thorpe Arch, near York. This species is probably identical with the *H. penicillaris* of Rondani, which I have not seen; the only difference between them appears to be that the legs are wholly black in the latter.

(To be continued).

DESCRIPTION OF A NEW SPECIES OF *LIBURNIA*.

BY JOHN SCOTT.

Of finding new *Liburniæ* there appears to be no end; their numbers increase so rapidly. In the same lot from which the undermentioned has been extracted, I believe there are at least two other new species. My collection being for comparison of no use, I, as a rule, when at a loss in this group, submit the doubtful example to M. Lethierry, the fortunate possessor of Dr. Fieber's collection, for identification. The following is a portion of the result of his kind investigation at this time.

LIBURNIA INSIGNIS, *n. sp.*

♂. Brachypterous. Pale yellowish. *Crown* about as broad as long, not projecting beyond the front of the eyes. *Elytra* reaching to about the middle of the abdomen, apical margin flatly rounded. *Abdomen* pitchy-black, posterior margin of the terminal segment broadly white; genital segment, viewed from the side, produced into an angular form posteriorly, and having a short, curved, acute tooth at the lower extremity.

Head: crown broad; breadth about equal to the length, basal foveæ distinct but not deep, the triangular space in front enclosed between the keels barely extending to the frons, anterior margin slightly convex, not projecting beyond the front of the eyes: *face* slightly brownish-yellow, broad, slightly narrowed between the eyes, central keel distinct but not prominent: *antennæ* yellow.

Pronotum: posterior margin flatly concave across the scutellum, side keels short, somewhat indistinct, disc on each side of the centre somewhat depressed. *Scutellum:* keels distinct, somewhat acute. *Elytra* reaching to about the middle of the abdomen, yellow transverse patch on the upper-side at the base, posterior margin of the last four segments very narrowly brown, down the centre of each a short narrow streak, not reaching the anterior margin, posterior margin of the last segment broadly white: genital segment black, shining, viewed from the side the posterior margin is produced into an angular form, and having a short, curved, acute tooth at the lower extremity, viewed from behind almost circular, margins of the upper half folding down inwardly and forming two triangular flaps, leaving a small space between their edges down the centre, processes black, forming a wide V-shaped character, apex of the arms white, produced into a point. Length 1 lin. (Paris), nearly.

The shape of the genital segment is alone sufficient to lead to the identity of this species, viz.: the flat isosceles-angular form of the posterior margin of the segment as seen from the side, and the two triangular flap-like pieces as seen from behind.

I have only seen a single ♂ example taken by Mr. G. Norman, at Pitlochry.

Lee, S.E.: *3rd April*, 1882.

NOTES ON *TENTHREDINIDÆ.*

BY P. CAMERON.

(continued from page 195.)

BLENNOCAMPA (MONOPHADNUS) SULCATA, *sp. n.*

Black; covered with a silky greyish or blackish pubescence, which gives the legs a fuscous tinge; apical fourth of anterior femora and tibiæ in front, and the four posterior knees dull testaceous-white. Antennæ thickish, not much longer than the head and thorax; 3rd joint about one-fourth longer than the succeeding. Head with a deep, longish depression behind the eyes, and slightly projecting behind them; frontal area and sutures indistinct; clypeus very slightly incised. Wings smoky, somewhat darker at the base; transverse radial nervure received in apical third of 3rd cubital cellule; transverse median a little before the middle of median cellule; 1st recurrent a little in front of middle of the 2nd cubital cellule; 2nd scarcely so near the middle of the 3rd, and not received in such an acute angle as the 1st; 3rd cubital cellule short and wide, compared with the length, which is a little shorter than the 2nd, on upper side, but longer on lower; there is a "bulla" on 1st transverse cubital nervure. Claws simple. Abdomen about one-fourth longer than the head and thorax; sheath of saw projecting, its upper side produced into a projecting rounded point, and bearing a few hairs.

The ♂ is similar in coloration, and has the antennæ a very little longer, and the wings if anything clearer. Length, 6—6½ mm.

This distinct species is very closely related to *B. exarmata*, Thoms. (Hym. Scand., i, 207), olim *monticola*, *id.* Opus. Ent., 279, 3, *non* Hartig., but that has the antennæ filiform, and the 3rd cubital cellule elongated, and no mention is made of any peculiarity in the shape of the sheath. From *B. micans*, Klug, it may be known by the eyes not reaching close to the base of the mandibles, by the indistinct frontal sutures and area, by the deep suture behind the eyes, while the head projects more behind, by the shorter 3rd cubital cellule; the transverse radial nervure is received further from the 3rd transverse cubital, and consequently the 2nd radial cellule is longer; and, lastly, in *micans* the transverse median nervure is received in the middle of the cellule; in *sulcata*, a little in front of the middle. *B. sericans*, again, is larger, has the abdomen longer, compared with the head and thorax, the middle tibiæ and tarsi are distinctly obscure white in front, the antennal fovea is larger, there is no suture behind the eyes, while the sheath is not prolonged into a projecting point at the upper part, and the saw is longer and with better marked indentations. As for the common *B. nigrita*, the long 3rd cubital cellule and the short second radial cellule at once distinguish it. *B. monticola*, Htg. = *feriata*, Zad., is also related to it, but may be at once separated by there being no suture behind the eyes, by the short 2nd radial cellule, by the 3rd cubital cellule being double the length of the 2nd, and by the tibiæ being all more or less white at the sides.

Germany (*Prof. Zeller*); Holgate, York (*Mr. T. Wilson*), among roses.

Heptamelus ochroleucus, Haliday, Nat. Hist. Rev., 1855, ii, p. 60, pl. ii, f. 1 = *Cœnoneura Dahlbomi*, Thoms. Haliday had no doubt of his species being the same as *Melicerta ochroleuca*, Ste., but Stephens' generic description does not agree; this, however, is a matter of no importance, as it affects neither the generic nor specific name. Haliday's figure and description are excellent. The figure given by M. André, Species des Hymén., i, pl. xv, f. 1, may be that of a new species, but it certainly does not represent *Cœnoneura Dahlbomi*, or, as it now must be called, *Heptamelus ochroleucus*.

Strongylogaster viridis, Smiedeknecht, Ent. Nacht., 1881 = *S. delicatulus*. When fresh and newly emerged, *delicatulus* is green, but after death the green colour disappears.

Strongylogaster macula, Klug, is British. I have taken it on ferns on the Kilpatrick Hills, Dumbartonshire.

Glasgow: *April*, 1882.

TWO NEW SPECIES OF *ICHNEUMONIDÆ*.

BY E. PARFITT.

HEMITELES LITOREUS.

Abdominis medio pedibus palpisque stramineo-ferrugineis; antennarum articulis 1—4 *subtus rufis.*

of equal length. Head and thorax sparsely and coarsely punctured, metathorax divided into six areas, coarsely punctured, with a minute tooth on each side. Wings iridescent and slightly smoky-hyaline, stigma dark piceous, radius testaceous-straw-colour towards the base, squamula the same, areole 5 angular. Legs ferruginous, coxæ and trochanters the same, in some specimens the posterior are stained, or are almost black, posterior tibiæ and tarsi entirely dusky. Abdomen depressed, fusiform in outline, or with the sides nearly parallel, basal segment black, narrow at the base, growing gradually wider for about two-thirds, where there are two small protuberances; from these to the apex the sides are parallel and striated. A broad shallow groove runs the whole length. Second and third segments pellucid, straw colour, with a ferruginous stain, the rest more or less stained with black, apex black.

Long., 3½—5½ mm. Mas et Fem.

I captured this species by sweeping herbage, *Aster tripolium*, &c., on the sea-shore near Woodbury Road Station, in May, 1881. I have taken it in the Exminster marshes, also near the sea; it is probably parasitic on some larvæ which feed on littoral plants.

MESOLEIUS ELEGANS.

Niger, abdomine rufo nigroque varia, segmentorum marginibus flavis, facie pectore et linea ante alas flavis; pedibus rufis, coxis et trochanteribus flavis, posticis flavo nigroque variis.

Black, head wider than the thorax, buccated behind; clypeus, palpi, and mandibles yellow, the latter ferruginous at the apex, Antennæ nearly as long as the body, the apical half recurved, dull ferruginous, the basal joints black above, beneath yellow. Thorax slightly swollen, black, a curved line on each side in front, a dot before, and a narrow line beneath the wings, yellow; scutellum and post-scutellum dull red (sometimes black), parapsides distinct. Wings hyaline, ample, iridescent, radius and stigma pale testaceous, inclining to opaque-white. Legs: the anterior and medial coxæ and trochanters pale yellow, the extreme base black, posterior black, with their apices yellow; femora, tibiæ, and tarsi fulvous, clothed with a white pubescence. Abdomen black, all the segments, except the basal one, banded with fulvous-red, and margined with pale yellow, which colour grows more distinct towards the apex. Basal segment gradually narrowing towards the base, the centre elevated, a deep groove runs half the length from the middle to the base, enclosed by two sharply raised lines. Long. 7½ mm. Caput et thorax = abdomen, 3¾ mm. Fem.

This species appears to come next to *M. amabilis*, Holmgren, Disp. Synop. Mesl. Scand., f. 19, and belongs to his sec. 3, div. 2, coh. 2 AA, *bb*, but differs in the colour of the coxæ and the transverse anal nervure being distinctly antefurcal. It appears to be widely and sparsely distributed, it has been taken by Mr. Bridgman, in the Norwich district, and by Mr. G. Bignell, near Plymouth, and I have taken two specimens near Exeter.

This insect varies a good deal in the colour of the abdomen.

Exeter: *April*, 1882.

RESULTS OF EXPERIMENTS IN REARING *TEPHROSIA CREPUSCULARIA* AND *BIUNDULARIA*, WITH REGARD TO VARIATION.

BY J. T. D. LLEWELYN, M.A., F.L.S.

Some years ago, Robert Stafford and I tried and published an experiment in rearing the dark smoke-coloured variety of *Tephrosia crepuscularia*, and I now offer a few remarks on a repetition of this experiment on this and another species of the same genus, viz., *T. biundularia*, in which the variation is still more pronounced and distinct.

Finding the variety of *crepuscularia* in a wild state, in a proportion of 5 per cent. to the type, we selected ova from a fine dark female moth, and, rearing them, were enabled to mate a dark pair, and thus obtain ova from two dark parents: in the next year we had a larger proportion of the dark smoky variety, and, repeating the selection of parentage, secured the union of darkly-bred dark parents, and thus, in 5 years of selected parentage, we were rewarded with a batch of 97 perfect insects of *Teph. crepuscularia*, all, without one solitary exception, of the dark smoky variation.

On a second trial of this same process, and in the third year of its satisfactory progress, we lost the whole lot from the ravages of the ichneumon flies, but nothing daunted, and favoured by circumstances, a fresh trial has this spring resulted thus. In the year, a batch of 250 insects hatched out from ova obtained from dark parents, but 20 have reverted to the original type.

In the case of *Tephrosia biundularia*, the variety is black, with the subterminal line clearly and conspicuously pencilled out in white, and this form of variation seems far more scarce with us than the corresponding form in *crepuscularia*. We have previously reared batches of this species, *crepuscularia*—both the spring and summer broods—but have only succeeded in obtaining a few specimens of the dark variation; last year, however, a dark female gave us a goodly batch of ova, and we are now hatching them out with the satisfactory result of having secured some twenty of this fine dark form; of these we have induced three pairs to mate, and have thus, at last, secured the wished-for darkly-bred ova.

I have used Doubleday's Nomenclature.

Will any of your correspondents kindly tell me if the other species of this genus are liable to similar variation?

I have plenty of the variety of *crepuscularia* in duplicate, should it be acceptable to your readers who would care to have it, but very few of *biundularia*.

RECTIFICATIONS CONCERNING *HOMOPTERA.*

BY JULES LICHTENSTEIN.

I. *Coccus lataniæ*, Boisduval (*Boisduvalia lataniæ*, Signoret), a very curious, round, brownish leaf-louse, fringed with a snow-white circle of fine secretion, and very common in hot-houses on all kinds of *Lataniæ* and *Calami*, is neither a *Coccus* nor an *Aleurodes*, but a true Aphidian. The very scarce winged form looks entirely like the winged forms of the genus *Vacuna*, Heyden; it has the same forked neuration of the upper wings, and five-jointed antennæ all with fine circles. It is easily distinguished at once from the *Vacunæ* by the presence of two little conical-pointed horns between the antennæ under the forehead. I suggest for it the new generic name CERATAPHIS ("horned plant-louse"), and the species will become *Cerataphis lataniæ*, Boisduval.

II. *Coccus rubi*, Schrank, has not, according to Signoret, been rediscovered since the short description appeared in the "Fauna Boica." But I found the insect last autumn, and succeeded in breeding it. It lives in the larval state through the winter, sucking the under-side of the leaves of *Rubus discolor*. Early in spring the male larva forms a little cocoon in the same manner as in *Dactylopius*, and the imago makes its appearance in April. The female is an oval, purple-red scale-louse, fringed and spotted with snow-white woolly secretion, and has eight-jointed antennæ. The male is also purple-red, and has ten-jointed antennæ; wings and legs white; four snow-white tails or setæ, the interior pair as long as the entire insect, the exterior as long as the wings. This latter character induces me to term the genus "TETRURA," and the species will thus be *T. rubi*, Schrank.

Montpellier: *8th April*, 1882.

Note on Aphalara nebulosa, Zett.—This species was originally introduced by me into the British list in my Monograph of the *Psyllidæ*, under the name of *A. radiata*, from specimens in the collection of the Rev. T. A. Marshall, which were taken at Cheltenham, as he informed me, either by beating or sweeping. In November, 1876, Dr. F. Löw sent me an example from the Imperial Museum of Vienna, desiring to know whether it was the same species as that described by me; but as he did not then give, nor has since given, me any clue as to what plant it was attached, I presume he has not been in a position to do so. Dr. O. M. Reuter, however, in the "Entomologisk Tidskrift" for 1881, p. 152, sp. 7, says that he has seen an example from Stockholm, on the ticket of which is "in *Epilobio angustifolio*," and as this, as well as other species of willow-herb, are not uncommon throughout this country, we appear to be now in a fair way to become acquainted with it. Nothing seems to be known of its earlier stages, so that a still greater inducement is in store for those who desire to be first in the field.—JOHN SCOTT, Lee, S.E.: *March 6th*, 1882.

Further note on Trioza crithmi.—The ink on the pages of the last part of the Magazine could have been barely dry when in answer to my enquiry, at page 263, I received a kind letter from Mr. P. H. Gosse, F.R.S., informing me that samphire grew in some profusion on Anstey's Cove Rocks, within a little distance from Torquay, and asking what the creature was like and when to be looked for. I at once replied, and have now the great gratification to say, that through his exertions I possess not only specimens of this species, but also the ova, larvæ, and nymph states. In fact, the whole biology of this valuable addition to the British fauna now lies before me in 4 glass bottles. I purpose describing the insect and its earlier stages afterwards, and will here only add that through all its transformations to the perfect state, it is uniformly of an orange-yellow colour. The eggs are set on long peduncles, and are easily seen. I believe that at Folkstone the plant is also very abundant, and as that place is much easier of access from here for pleasure seekers and others than is Devon, I may hear of the insect being also found there.—Id.: 16*th April*, 1882.

Additions to the Perthshire Hemiptera.—The following species of *Hemiptera* were captured at Pitlochry, and may be added to my former lists (vol. xvi, pp. 175 and 213).

Agalliastes Wilkinsoni, two specimens with fully developed membrane, among short grass in woods; *Myrmedobia tenella*, *Teratocoris viridis*, moss, Knock Barril; *Nabis flavomarginatus*, Scholz, several developed specimens; *Pæciloscytus Gyllenhali* with fully developed membrane; *Orthotylus fuscescens*, Kirschb., on pines; *Corixa carinata*, Sahlb., Loch Broom or its vicinity; *Trioza abdominalis*, Flor, on ivy; *T. galii*, Foerst., short grass, Faskally; *Doratura stylata*, Boh., Middlehaugh, July and August, many developed specimens; *Liburnia neglecta*, Flor; *L. elegantula*, Boh., Faskally; *L. denticauda*, Boh., Faskally; *L. uncinata*, Fieb., grass in woods; *L. mesomela*, fully developed; *L. discolor*, Boh., developed; *L. insignis*, Scott (Mr. Scott will describe this new species); *L. æmulatrix*, Scott; *L. distincta*, Flor, moss, Knock Barril; *L. forcipata*, Boh.; *L. notula*, Germ., Craigour; *Stiroma nasalis*, Boh.; *Dicranotropis hamata*, fully developed, in profusion; *Chlorita viridula*, Fall.; *Acocephalus rivularis; A. polystolus*, Fieb., Middlehaugh; *Deltocephalus Minki*, on a dry hill, August; *D. socialis var. onustus; D. pseudocellaris*, Flor; *D. picturatus*, Fieb.; *D. Flori*, Fieb.; *Aphalara picta*, Craigour; *Thamnotettix frontalis*, H.-S., Culk; *Eupteryx abrotani*, Doug.; *Athysanus russeolus*, Fall.; *A. piceus*, Scott, in a marsh, Dunfallandy; *Eupelex spathulata*, *E. producta*, *E. cuspidata*, all common on a dry hill, Middlehaugh; *Orthezia cataphracta*, very abundant in the larval state; I bred two winged males and found others in September in profusion, sitting quietly on fine grass; *O. floccosa*, common in the larval state, with the above; *O. urticæ*, rare, in the larval state. *Deltocephalus picturatus* and *Athysanus russeolus* are new to the British list.—G. Norman, Peebles: *March* 28*th*, 1882.

Abundance of Ptinella denticollis, Fairm.—Since writing my former note on *Ptinella denticollis* (Ent. Mo. Mag., vol. xvii, p. 186), I have taken every opporcollections put together, and also that up to that time this little beetle has been captured at the rate of only 1 or 2 specimens at a time, my success has been most remarkable.

Almost invariably, wherever I have searched for *P. denticollis* I have found it not in ones and twos, but in scores and hundreds. It is still plentiful in the locality in which I first found it (Knowle), and during the past winter and present spring it has occurred to me at the following amongst other places. In a bye-lane within three miles of the centre of Birmingham it is very plentiful under bark of oak stumps, posts, and rails; and in company with it I find *Euplectus nigricans*. At Sutton Park, seven miles from Birmingham, it literally swarms under the bark of dead oak trees. At Needwood Forest I captured a goodly number under the loose bark of decaying holly trees, and at Salford Priors and Bewdley Forest it occurred freely under bark on oak logs. It is very common under similar conditions at Leigh Woods near Bristol, and on a recent visit to Dean Forest I found several specimens (together with what I believe to be *P. britannica*) under bark on an old oak stump. It seems that comparatively few Coleopterists have met with *P. denticollis*, and the only conclusion I can arrive at is that owing probably to its minute size and its resemblance in colour to the bark under which it lives, it has been overlooked. Perhaps my note may have the effect of inducing other workers to look for this species; if so, and success attend their search, probably we shall soon see records of its capture from many other districts. I shall be pleased to send specimens to any Coleopterist in want of the species.—W. G. BLATCH, 214, Green Lane, Smallheath, near Birmingham: *April 16th*, 1882.

Early Coleoptera near Lincoln.—I have never been accustomed to get *Coleoptera* by sweeping much before May, certainly not in the North of England, but on March 18th, in a wood near Lincoln, I found beetles as abundant on the herbage as they often are in early summer. I swept *Lathrobium boreale* in some numbers, *Cytilus varius*, *Lema melanopa*, *Lathridius nodifer*, a *Cionus* or two, two or three species of *Halticidæ*, *Cœliodes quercus*, two or three *Ceuthorhynchi* (*C. punctiger* being the best), sundry *Staphylinidæ*, and a few common *Hemiptera*. *Atemeles emarginatus* was to be found in a nest of *Formica fusca*. *Coprophilus striatulus* is usually common on the Lincoln pavements in April; this year specimens were running about on March 19th.—W. W. FOWLER, Lincoln: *April 15th*, 1882.

Meloë variegata and other Coleoptera at Margate.—I have much pleasure in recording the occurrence at Margate of *Meloë variegata*, Don., of which rarity I obtained three specimens, during a visit in the early part of March last. Two of these were found by my sister, one sprawling upon the pathway, and the other upon the sands beneath, while I took the third myself upon a grassy bank not far from the town. Of *M. cicatricosa*, no less than six specimens turned up, four falling to my lot, and two to that of a friend who was with me for a couple of days. Among the more noteworthy of my remaining captures were the following:—*Dromius 4-signatus*, several under recently turned stones in a heap a mile or so from the town; *Bembidium 5-striatum*, two in the deserted burrows of sand hoppers in the cliff-cuttings; *Ocypus fuscatus*, one under a chalk lump upon the sands; *Saprinus maritimus*, *Rhinosimus viridipennis*, in profusion under bark in a small copse near

Kingsgate; *Trachyphlœus alternans*, *Tanymecus palliatus*, and *Mantura Matthewsi*, a single example of each; *Phyllotreta lepidii*, common by sweeping along the cliffs; *Cassida nobilis*, not uncommon under stones in the heap frequented by the *Dromius;* unfortunately I did not find it until the day before my departure, and therefore, failed to obtain more than fourteen specimens, all of which were clinging to the lower surfaces of the stones. Insect life in general appeared remarkably forward for the time of year, much more so than I found to be the case in this neighbourhood upon my return.—Theodore Wood, 5, Selwyn Terrace, Upper Norwood: April, 1882.

A marine Caddis-fly.—I have just received a letter from Prof. F. W. Hutton, of Canterbury College, New Zealand, in which is the startling announcement that the larva of a marine caddis-fly lives in Lyttleton Harbour in rock-pools between high and low water-marks, and forms its case of coralline seaweed. Prof. Hutton says he has kept the larvæ for months in jars of sea-water, but only once succeeded in breeding the insect, and that was when he was away from home, so that only the dead remains were obtainable. These (with larvæ and cases) are on their way to this country, and I am not a little curious as to what a creature of such anomalous habits can be like, for this is not an instance of a species occurring in "brackish" water, but absolutely marine.

Prof. Hutton also announces the breeding and forwarding of a New Zealand species of *Helicopsyche*.—R. McLachlan, Lewisham, S.E.: 11*th April*, 1882.

Dichrorhampha distinctana, Hein., a species of Tortricidæ new to Britain.—This very pretty species is allied to *plumbagana* and also slightly to *consortana*, it is of a rich dark brown mottled with silvery, and having the costal silvery streaks long and very oblique, the first united with the dorsal blotch, and the second connected by a sharp angle with the anterior edge of the ocellus, which is peculiarly formed, having a sharp angle in the middle of its anterior margin. The dorsal blotch extends two-thirds across the wing, is oblique, constricted above the middle, and has sinuous margins. There is a row of distinct black dots along the hind margin of the wing. Hind-wings pale grey, cilia of all the wings whitish with dark tips. Taken by Mr. R. South in a wood in North Devon among golden-rod (*Solidago virgaurea*).

It appears to be a very local species, being only recorded by Heinemann from bare hills near Vienna.—Chas. G. Barrett, Pembroke: 14*th April*, 1882.

Asthenia scopariana, H.-S., bred.—I have just had the pleasure of rearing a specimen of this pretty little Tortrix from a single larva sent me last year by Mr. Hodgkinson, feeding in flowers of *Genista tinctoria*. It arrived just too late to be described as it had just spun up in one of the flowers.—Id.

Obituary.

Charles Robert Darwin, LL.D., F.R.S., passed away, almost suddenly, at his residence at Down, Kent, on the 19th April, in his 74th year. Long before this brief announcement can be published the daily and weekly journals in all parts of the labours, and we have no hesitation in saying, that even his most unrelenting opponents will agree that we have lost the greatest Naturalist, the most painstaking and conscientious observer, and, privately, one of the most single-minded and kindest-hearted men of our times.

In the notices of his labours, full justice will have been given to his wonderful discoveries of the natural relations of plants and insects, in connection with the fertilization of the former. But it may, perhaps, not be so generally noticed, that during his celebrated voyage in the "Beagle," he collected a vast number of new and interesting insects; in *Coleoptera* alone his materials formed the subject of many memoirs by Mr. G. R. Waterhouse. Also it may not be so generally known, that he was one of the original Members of the Entomological Society of London, of whom only six now remain. He was with us long enough to see ridicule replaced by reasoning (often sufficiently lame) amongst his opponents. He was essentially a man who worked for the future; the Naturalists of to-day, painfully as they may feel the blow, cannot sufficiently realize the loss they have sustained.

ENTOMOLOGICAL SOCIETY OF LONDON: *February* 1*st*, 1882.—H. T. STAINTON, Esq., F.R.S., &c., President, in the Chair.

The President appointed Lord Walsingham and Messrs. Godman and Pascoe Vice-Presidents for the ensuing year,

R. Todd, Esq., of Bayswater, was elected a Member.

Mr. E. A. Fitch exhibited a very singular melanochroic variety of *Strenia clathrata* from Hampshire, in which the dark markings were confluent, so that only a few spots of the pale coloration remained; and a new Myrmecophilous Coleopterous insect, taken by Mr. Rothney in India.

Mr. C. O. Waterhouse exhibited *Macromela Balyi*, Crotch, one of the *Languriidæ*, also from Mr. Rothney; also examples of a species of *Pentatomidæ* from the same source, involving a question as to distinct species, or only conditions depending upon degrees of maturity.

Sir S. S. Saunders exhibited both sexes of *Halticella osmicida*, Saunders, and read a note, in connection therewith, regarding *Euchalcis venusta*, Dufour.

Dr. Sharp communicated a critique of Dr. Horn's recent paper on the classification of the *Adephaga*, which occasioned a discussion, in which several Members took part.

Mr. A. G. Butler communicated a paper on additional *Lepidoptera* from the Hawaiian Islands, received from the Rev. T. Blackburn.

Professor Westwood communicated a Memoir on Fig-insects, with regard to caprification, &c.

March 1*st*, 1882.—The President in the Chair.

Mr. Billups exhibited examples of *Vespa germanica*, part of the congregation of this insect noticed by him in this Magazine, *ante* p. 234; in reply to a question he stated, that he believed all the specimens observed pertained to the same species, at all events, all those he brought home did so, *V. vulgaris* not being among them. He also exhibited a series of *Ichneumon erythræus*, a species hitherto considered to be extremely rare in this country. Likewise many specimens of *Callistus lunatus*, recently captured.

Mr. McLachlan, on behalf of Mr. P. H. Gosse, showed the envelopes in which a series of *Ornithoptera Haliphron*, &c., had been received from Celebes, and which bore the imprint of the insects defined with almost photographic accuracy. Mr. Gosse asked for suggestions as to cause, and the general opinion appeared to be that slight heating and pressure combined offered the most likely explanation. A subsequent analysis of the paper envelopes with regard to the possible presence of lead, made by Mr. Meldola, produced a negative result.

Mr. Meldola called attention to a paper by Mr. W. H. Edwards, recording the observations of Dr. Wettfeld on the habits of *Heliconius Charitonia*. The male butterflies appeared in swarms around the pupæ, and pairing took place before the females had emerged from the puparia, the males detecting the sex of the pupa immediately, and deserting those which were about to produce males. The Rev. W. Deans Cowan, present as a visitor, stated that he had made a quite analogous observation with regard to *Papilio Demoleus* in Madagascar.

Mr. C. O. Waterhouse read a description of the Indian Myrmecophilous Coleopterous insect exhibited at the last meeting, which he considered to form a new genus, and named *Paramellon sociale*.

Dr. Sharp, in communicating descriptions of some new forms of *Coleoptera* from New Zealand, entered into a lengthy, and very severe critique of Capt. Broun's "Manual of New Zealand *Coleoptera*."

Mr. A. G. Butler communicated a further portion of his paper on the *Lepidoptera* of Chili, collected by Mr. Edmonds (*Bombyces*).

Sir S. S. Saunders read a paper on the terminal segment of *Halticella*, with regard to M. André's published statement.

Mr. E. Saunders read a paper on the terminal ventral segments of *Prosopis* and other *Anthophila*.

April 5th.—The President in the Chair.

Mr. L. de Nicéville, of the Calcutta Museum, was elected a foreign Member.

Mr. Billups exhibited a number of small *Ichneumonidæ*, &c., mounted on discs of microscopic glass, thus enabling the upper and under-side of the same insect to be critically examined. The specimens were first mounted lightly on card, and subsequently transferred to the glass discs. The method appeared likely to prove of great service, the only drawback being the liability to breakage of the glass.

The Rev. H. S. Gorham exhilited a *Coccinella* sent to him by Mr. Hodgson, from Gloucestershire, which appeared to combine the characters of *C. ocellata* and *oblongopunctata*, and might possibly be a hybrid. He and Mr. Waterhouse stated it was an erroneous notion that *Coccinellidæ* are excessively variable, on the contrary, they are very constant in markings, save in two species, viz., *C. variabilis* and *C. bipunctata*.

Mr. McLachlan exhibited his collection of British Caddis-flies (*Trichoptera*), and made remarks on some of the more interesting forms, especially with regard to the cases. The collection had been more than 20 years in course of formation.

Mr. Butler continued his paper on the *Lepidoptera* of Chili (*Noctuæ*).

INDEX.

PAGE

GENERAL INDEX ... i.

ENTOMOLOGICAL SOCIETY ... viii.

SPECIAL INDEX—
- Coleoptera ... xi.
- Diptera ... xii.
- Hemiptera ... xiii.
- Hymenoptera ... xiv.
- Lepidoptera ... xv.
- Neuroptera ... xvii.
- Thysanura ... xvii.

PAGE

INDEX TO CONTRIBUTORS ... xviii.

GENERA AND SPECIES NEW TO SCIENCE ... xviii.

„ „ „ „ „ BRITAIN ... xix.

LARVÆ OF BRITISH SPECIES DESCRIBED ... xx.

REVIEWS ... xx.

OBITUARY ... xx.

INDEX TO GENERAL SUBJECTS.

PAGE

Abundance of larvæ of Charæas graminis ... 39, 68
„ „ Ptinella denticollis ... 276
„ „ Thecla w-album, Unusual ... 68
Acanthococcus aceris, Another apterous male in the Coccidæ ... 250
Acentropus, Suggestions for obtaining the eggs of ... 17
Acherontia Atropos in Caithness, Note on ... 260
Acidalia straminata, &c., in Yorkshire ... 68
Additions to the Morayshire Hemiptera ... 18, 67
„ „ „ Perthshire „ ... 276
Aëpophilus Bonnairei, Signoret, Note on; a genus and species of Hemiptera new to Britain ... 145
Agrotis Ashworthii at Penmaenmawr ... 162
Alternation of generation in the Cynipidæ ... 224
Amblyptilia punctidactyla ... 212
Amphidasis betularia at Gainsborough, Black form of ... 61
Anerastia Farrella, A few words about Epischnia ... 217
„ „ Re-discovery of ... 211, 219
Anthomyiidæ, Annotated list of British ... 1, 27, 62, 101, 123, 172, 201, 221, 265
Aphalara nebulosa, Note on ... 275
„ nervosa, Note on ... 18
Arctiidæ from North America, Descriptions of some apparently new species of 135
Argynnis Paphia, Curious variety of ... 188
Asthenia scopariana bred ... 278
Beetles, Influence of size of elytra on flight in ... 213
"**Bidrag** till nordvestra Sibiriens Insektfauna. Coleoptera, i, af John Sahlberg:" Review ... 90
Blackburn, Death of John Bickerton, B.A. ... 164
Blackwall, „ „ John, F.L.S. ... 20, 45
Boletobia fuliginaria at Lewisham ... 108, 109
„ „, Further captures of ... 109
„ „ in London ... 68, 109
British Anthomyiidæ, Annotated list of 1, 27, 62, 101, 123, 172, 201, 221, 265
„ Hemiptera-Homoptera, On certain ... 65, 104, 137
„ Psyllina, with corrections in the synonymy ... 258

PAGE
British Pterophoridæ, Notes on ... 177
„ Tortrices, Notes on ... 152, 185
Butterflies from East Africa, On two new species ... 145
„ of the genus Teracolus, occurring at Accra, Gold Coast, On the ... 227
Butterfly from the Malay Peninsula, Description of a new ... 134
Bythoscopidæ Notes on the British ... 51
Caddis-fly, A Marine ... 278
Cænis maxima, Remarks on Dr. E. Joly's ... 71
Callidryas Drya, Boisd., Life-History of ... 219
Capture of Cassida vittata near Hastings ... 214
„ „ Ceratocombus and Cryptostemma ... 113
„ „ rare Hymenoptera on the South Coast of England ... 160
„ „ „ Lepidoptera and Homoptera in Herefordshire ... 111
Captures of British Aculeate Hymenoptera, Notes on ... 262
„ „ Coleoptera in 1881 ... 158
„ „ „ „ the Isle of Wight ... 70
„ „ Lepidoptera in the Norfolk fens ... 110
Cassida vittata near Hastings, Capture of ... 214
Ceratocombus and Cryptostemma, Capture of ... 113
Cerura erminea, A few words on the larva of, as distinguished from that of C. vinula ... 161
Cetoniidæ from East Central Africa, New ... 156
Charæas graminis, Abundance of larvæ of ... 39, 68
„ „ in Thuringia, Ravages of the larvæ of ... 111
„ „ The influence of rain in the destruction of the larvæ of ... 86
Charaxes from West Africa, On a new species of ... 107
Chaudoir, Death of Baron de ... 20, 43
Choragus Sheppardi in Warwickshire ... 112
Cicada montana ... 40
Coccidæ, Acanthococcus aceris, Another apterous male in the ... 250
Cocoons of some of the silk-spinning Lepidoptera, On colouring matter, &c., of ... 260
Coleophora adjunctella, Hodgk., A new species of ... 189
„ apicella, A fruitless search for the larvæ of ... 141
Coleoptera at Chirique ... 158
„ „ Hastings, Rare ... 19, 40, 139
„ „ Margate ... 277
„ from New Zealand, Some new species and genera of ... 46
„ , Further notes on Parthenogenesis in ... 128
„ in 1881, Captures of ... 158
„ „ Scotland, Rare ... 188
„ „ the Forest of Dean, Notes on the past season, and on the occurrence of certain Lepidoptera and ... 186
„ „ „ Isle of Wight, Captures of ... 70
„ near Lincoln, Early ... 277
„ of Askham Bog, York ... 7

PAGE

Collecting Coleoptera, &c., A new mode of ... 111
Colouring matter, &c., of cocoons of some of the silk-spinning Lepidoptera, On ... 260
Comparison of the Pterophori of Europe and North America, suggested by Lord Walsingham's "Pterophoridæ of California and Oregon" ... 73, 117
Corticaria Wollastoni at Mablethorpe, &c. ... 261
Cosmia pyralina, near Weybridge ... 88
Crambus Warringtonellus, Natural History of ... 129
Cryptostemma, Capture of Ceratocombus and... ... 113
Cynipidæ, Alternation of generation in the ... 224
Darwin, Death of Charles Robert ... 278
"**Degeeria,**" The generic term ... 19, 43
Deilephila spinifascia, Butler, Life-History of ... 131
Delphacidæ, On certain South American ... 154
Deltocephalus Flori, Fieb., in England ... 140
Description of a new butterfly from the Malay Peninsula ... 134
" " " " genus and species of Tenthredinidæ ... 107
" " " " species of Liburnia ... 270
" " " " " " Saturniidæ from the Gold Coast ... 146
" " a Eudorea new to science (Eudorea conspicualis) ... 134
" " the larva of Ennychia octomaculalis ... 57
" " " " " Hydrœcia nictitans ... 195
" " " " " Scoparia truncicolella ... 106
" " " " " Scopula lutealis ... 147
Descriptions of some apparently new species of Arctiidæ from North America ... 135
Diasemia literalis in Pembrokeshire, Re-occurrence of ... 69
Dichrorhampha distinctana, Heinm., a Tortrix new to Britain ... 278
Dilar, A North American species of ... 55
Diptera in the New Forest, Rare ... 89
" of the Norfolk broads ... 149
Doleschall, Carl Ludwig, A brief notice of the Dipterologist ... 114
Drepana sicula ... 87, 108, 141, 233
Dufourea vulgaris, Schk., at Woking ... 161
Emmelesia blandiata, Natural History of ... 180
Ennychia octomaculalis, Description of the larva of ... 57
" " in Pembrokeshire ... 69
Entomological collecting on a voyage to the Pacific ... 81
" notes from Teneriffe, St. Vincent, &c.... 256
" Society of London, Proceedings of the 20, 72, 91, 116, 191, 216, 279
Entomology of Portugal, Notes on the (Coleoptera) ... 230
" " " " " " (Hymenoptera Aculeata) ... 165
Ephemeridæ, An announcement of new genera of the ... 21, 207
Epischnia (Anerastia) Farrella, A few words about ... 217
Eudorea new to science (E. conspicualis), Description of an... ... 134
Eulepia grammica ... 212
Eupithecia, A new species of (jasioneata) ... 80, 87
" consignata at Boxhill ... 39
" inturbata, Hüb., H.-S. (subciliata, Gn.), The larva of ... 142

PAGE
Eupœcilia Mussehliana and other Lepidoptera near Pembroke ... 70
Eustra, Notes on the genus, in Japan ... 39
Flight in beetles, Influence of size of elytra on ... 213
Fungi that attack insects, &c., Note on some ... 263
Garneys, Death of W. ... 144, 163
Gelechia brizella, Life-History of ... 56
„ scotinella, H.-S., in England, Occurrence of... 143
Generation in the Cynipidæ, Alternation of ... 224
Giebel, Death of Professor C. G. A. ... 215
Gray, Death of John ... 190
Gymnancyla canella, &c., in East Sussex, Heliothis armiger ... 141
Gyrinus natator, Ichneumonidæ infesting larvæ of ... 88
Harpalus discoideus, F. ... 112
Heliothis armiger, Gymnancyla canella, &c., in East Sussex ... 141
Hemiptera, Additions to the Morayshire ... 18, 67
„ „ „ „ Perthshire ... 276
“ „ Argentina” by Carolus Berg: Review ... 90
„ at Battle, &c., Notes on ... 113
„ „ Hastings ... 140
„ -Homoptera, On certain British ... 65, 104, 137
„ of Finland ... 41
Hemiteles, A new species of ... 184
Hepialus humuli, Curious variety of ... 111
Himera pennaria, Note on the egg and some peculiarity of structure in the larva of ... 33
Homoptera in Herefordshire, Capture of rare Lepidoptera and ... 111
„ , Rectifications concerning ... 275
Hydrœcia nictitans, Description of the larva, &c., of ... 195
Hymenoptera at Hayling Island and Bournemouth, Aculeate ... 113
„ in 1881, Notes on spring ... 42
„ , Notes on captures of British Aculeate ... 262
„ , On five new British; with a synoptical table of the genus Sphecodes ... 197
„ on the South Coast of England, Capture of rare ... 160
Hypopus parasitic on ants ... 43
Ichneumonidæ infesting larvæ of Gyrinus natator ... 88
„ , Two new species of ... 78, 251, 272
Influence of rain in the destruction of the larvæ of Charæas graminis ... 86
„ „ size of elytra on flight in beetles ... 213
„ „ volcanoes on flying Coleoptera, The ... 138
Information for Coleopterists ... 235
Insectarium at the Zoological Gardens ... 15
Japan, A note from ... 159
Larentia didymata bred from Anemone nemorosa ... 68
Larva of Cerura erminea, A few words on the, as distinguished from that of C. vinula ... 161

Larva of Himera pennaria, Note on the egg and some peculiarity of structure in the 33
„ „ Hydrœcia nictitans, Description of the 195
„ „ Scoparia truncicolella, „ „ „ 106
Larvæ of Charæas graminis, Abundance of 39, 68
„ „ „ „ in Thuringia, Ravages of the 111
„ „ „ „ , The influence of rain in the destruction of the 86
„ „ Coleophora apicella, A fruitless search for the 141
„ „ Gyrinus natator, Ichneumonidæ infesting 88
„ „ Scopula lutealis and S. prunalis 189
Lasiosomus enervis, H.-S., near Weybridge 161
Leaf-mining larvæ extracted by birds (?) 143
Lebia crux-minor in Japan 188
Lepidoptera and Coleoptera in the Forest of Dean, Notes on the past season, and on the occurrence of certain 186
„ „ Homoptera in Herefordshire, Capture of rare 111
„ at Barnwell Wold 38
„ „ Deal, Rare 87
„ in Roxburghshire, in 1881, Notes on 209
„ „ the Norfolk fens, Captures of 110
„ near Pembroke, Eupœcilia Mussehliana and other 70
„ observed in the neighbourhood of Gallipoli, Turkey in 1878, List of 10, 29, 92
„ of West Norfolk, Notes on the 239
"Les Cynipides, 1re partie, par Dr. H. Adler, de Schleswig, traduit et annoté par J. Lichtenstein:" Review 215
Liburnia, Description of a new species of 270
Life-History of Callidryas Drya, Boisd... 219
„ „ „ Deilephila spinifascia, Butler 131
„ „ „ Gelechia brizella 56
Limnophilus subcentralis, Brauer, in Scotland... 72
Lincoln, Early Coleoptera near 277
List of British Anthomyiidæ, Annotated 1, 27, 62, 101, 123, 172, 201, 221, 265
„ „ Lepidoptera observed in the neighbourhood of Gallipoli, Turkey in 1878 .. .. 10, 29, 92
Marine Caddis-fly, A 278
Measurements in descriptive Entomology; a suggestion 205, 236, 237
Meligethes morosus, Er., a species new to Britain 112
Meloë variegata and other Coleoptera at Margate 277
Miana expolita, Natural History of 76
Micralymma brevipenne, Note on 140
"Micrographic Dictionary, The, Fourth Edition, edited by J. W. Griffith, M.D., assisted by Rev. J. M. Berkeley and T. Rupert Jones:" Review 72
Micro-Lepidoptera, Notes on 16
Mimæseoptilus Hodgkinsoni versus Loewii 212
Morayshire Hemiptera, Additions to the 18, 67
Moults in larvæ from the same batch of eggs, On the variable number of ... 86
Muscular power of Rhagium inquisitor 18

PAGE
Natural History of Crambus Warringtonellus 129
„ „ „ Emmelesia blandiata 180
„ „ „ Miana expolita 76
„ „ „ Papilio Machaon, Some points in the 244
Nepticula agrimoniæ, Heyden, a species new to Britain 211
„ sericopeza near Cambridge, Occurrence of 142
Neurorthus (Costa, 1863) = Sartena (Hagen, 1864) 89, 140
New Cetoniidæ from East Central Africa 156
„ genera of the Ephemeridæ, An announcement of 21, 207
„ locality for Polycentropus Kingi, McLach. 163
„ mode of collecting Coleoptera, &c. 111
„ species and genera of Coleoptera from New Zealand, Some 46
„ „ of Coleophora (C. adjunctella, Hodgk.) 189
„ „ „ Eupithecia (jasioneata) 80, 87
„ „ „ Ichneumonidæ, Two 78, 251
„ Zealand Journal of Science 238
Nonagria despecta in Pembrokeshire 109
North American species of Dilar 55
„ Middlesex Natural History Association 216
Notes, More tropical 214
„ on British Tortrices 152, 185
„ „ „ Pterophoridæ 177
„ „ captures of British Aculeate Hymenoptera 262
„ „ Hemiptera at Battle, &c. 113
„ „ Lepidoptera in Roxburghshire in 1881 209
„ „ Micro-Lepidoptera 16
„ „ spring Hymenoptera in 1881... 42
„ „ Tenthredinidæ 126, 193, 271
„ „ the British Bythoscopidæ 51
„ „ „ Coleoptera of the Hastings district 234
„ „ „ Entomology of Portugal (Coleoptera) 230
„ „ „ „ „ „ (Hymenoptera Aculeata) 165
„ „ „ genus Eustra in Japan 39
„ „ „ Lepidoptera of West Norfolk 239
„ „ „ past season, and on the occurrence of certain Lepidoptera and Coleoptera in the Forest of Dean 186
„ „ „ species of Ophthalmophora, a genus of Geometrid moths .. 59
„ „ Thysanura collected in the Canaries and Madeira 14
Notodonta cucullina 88
„ dictæa double-brooded, Smerinthus populi and 211
Occurrence of Œcetis furva, Ramb., in Cumberland 163
„ „ Gelechia scotinella, H.-S., in England 143
„ „ Nepticula sericopeza near Cambridge 142
Œcetis furva, Ramb., in Cumberland, Occurrence of 163
Ophthalmophora, Notes on the species of, a genus of Geometrid moths ... 59
Oporabia, The genus 87

PAGE

Panorpidæ from Western North America, On two new ... 36

"Papilio; devoted to Lepidoptera exclusively. Organ of the New York Entomological Club;" Review ... 20

Papilio Machaon, Some points in the Natural History of ... 244

Parthenogenesis in Coleoptera, Further notes on ... 128

„ „ Tenthredinidæ, On ... 127

Peculiarity of structure in the larvæ of Himera pennaria, Note on the egg and some ... 33

Perthshire Hemiptera, Additions to the ... 276

Phytosus balticus, &c., at Mablethorpe ... 158

Pieris napi, Singular variety of ... 110

Platyptilia dichrodactyla and Bertrami ... 143

Plusia orichalcea in Pembrokeshire ... 109

Polycentropus Kingi, McLach., New locality for ... 163

Polystichus vittatus, at St. Leonard's, Re-occurrence of ... 235

Portugal, Entomology of ... 165, 230

Proceedings of the Entomological Society of London 20, 72, 91, 116, 191, 216, 279

" „ „ „ Perthshire Society of Natural Science. Vol. I, part 1:" Review ... 238

Psylla buxi, Note on the earlier states of ... 18

Psyllidæ not yet known as British, Note on Trioza crithmi, F. Löw, a species of 263

Psyllina, with corrections in the synonymy, British ... 253

Pterophori of Europe and North America, A comparison of the, suggested by Lord Walsingham's "Pterophoridæ of California and Oregon" ... 73, 117

Pterophoridæ, Notes on British ... 177

Pterostichus vulgaris, &c., in a frog's stomach ... 188

Ptinella denticollis, Abundance of ... 276

Putzeys, Death of Jules ... 215

Rain, The influence of, in the destruction of the larvæ of Charæas graminis 86

Rare Coleoptera at Hastings ... 19, 40, 139

„ „ in Scotland ... 188

„ Diptera in the New Forest ... 89

„ Lepidoptera at Deal ... 87

Ravages of the larvæ of Charæas graminis in Thuringia ... 111

Rectifications concerning Homoptera ... 275

Re-discovery of Anerastia Farrella ... 211, 219

Remarks on Dr. Joly's Cænis maxima ... 71

Re-occurrence of Diasemia literalis in Pembrokeshire ... 69

„ „ Polystichus vittatus at St. Leonard's ... 235

„ „ Trochilium scoliiforme at Llangollen ... 162

"Report of the Entomologist of the United States Department of Agriculture for the Year 1880, by J. H. Comstock:" Review ... 263

Revue Coleoptérologique ... 190

Rhagium inquisitor, The muscular power of ... 18

Rivista Scientifico-Industriale e Giornale del Naturalista ... 216

Sartena (Hagen, 1864) = Neurorthus (Costa, 1863) ... 89, 140

Saturniidæ from the Gold Coast, Description of a new species of ... 146

Scarcity of Colias Edusa in 1881 ... 210

PAGE
Scoparia truncicolella, Description of the larva of 106
Scopula lutealis and S. prunalis, Larvæ of 189
„ „ , Description of the larva of 147
Sericomyia borealis "singing" while at rest 159, 189, 190
Setodes argentipunctella, McLach. 163
Smerinthus populi and Notodonta dictæa double-brooded 211
Société Française d' Entomologie 163
Sphecodes, On five new British Hymenoptera; with a synoptical table of the genus 197
Stenophylax rotundipennis, Brauer, in Scotland 163
Tenthredinidæ, Description of a new genus and species of 107
„ , Notes on 126, 193, 271
„ , On Parthenogenesis in 127
Tephrosia crepuscularia and biundularia, Results of experiments in rearing 274
Teracolus occurring at Accra, Gold Coast, On the Butterflies of the genus .. 227
"The Butterflies of Europe, by H. C. Lang, M.D., F.L.S.:" Review ... 91
Thecla w-album, Unusual abundance of 68
Thomson, Death of Sir Charles Wyville, LL.D., F.R.S. 264
Thyreophora antipodum; new species of Diptera 35
Thysanoptera, A request for European 235
Thysanura collected in the Canaries and Madeira, Notes on 14
Tortrices, Notes on British 152, 185
Tortricidæ, Dichrorhampha distinctana, a species of, new to Britain ... 278
Tortrix Lafauryana, Ragonot, a species new to Britian 17, 260
"Transactions of the Norfolk and Norwich Naturalist's Society. Vol. 3, part 2:" Review 90
Trioza crithmi, F. Löw, Note on, a species of Psyllidæ not yet known as British 263, 276
Trochilium scoliiforme at Llangollen, Re-occurrence of 162
Tropical notes, More 214
Vanessa Antiopa at Llandaff 18
Variety of Argynnis Paphia, Curious 188
„ „ Hepialus humuli, „ 111
„ „ Pieris napi, Singular... 110
Vespa germanica, Fab., Early appearance of 234
Volcanoes, The influence of, on flying Coleoptera 138
Wiener entomologische Zeitung 163
Winters in Japan, On the supposed effect of the, on the smaller Coleoptera 5

INDEX OF SUBJECTS NOTICED IN THE PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF LONDON.

PAGE
Adephaga, Dr. Horne's classification of.. 279
Aëpophilus Bonnairei exhibited 192
Aleurodes carpini exhibited 72
Amazons, Lepidoptera from the 92
Anniversary Meeting 216

PAGE
Argas persicus in Turkestan, Notes on 72
Australia, Rhynchota from 72
Bombyliidæ parasitic on Locusts 91, 117, 192
Bombyx mori, Abnormal pupa of 116
Borneo, New species of Cicadidæ from 192
Brachycerus ?, Larvæ of, destructive to lilies 192
Butterflies, Female pupæ of, attractive to males 280
„ in papers, Imprints of 280
Caddis-flies, Collection of British, exhibited 280
Callistus lunatus captured in quantity 279
Cecidomyia foliorum on Artemisia vulgaris 116
Cecidomyiidæ, New species of, on flowers of Galium mollugo 116
Cereals, Diptera destructive to, in Britain 192
Cerura vinula and erminea, Differences in the larvæ of 192
Ceylon, New insect of doubtful order from 191
Charæas graminis, Damage caused by larva of 91, 117
Chili, Lepidoptera of 117, 192, 280
Cicadidæ, New species of 192
Coccinella, Variation in 280
Coleoptera from India, New Myrmecophilous species of 280
„ „ New Zealand, New species of 280
„ „ Sumatra, New 117
„ „ the Hawaiian Islands, New 191
„ , New Longicorn 92
Coreidæ and Pentatomidæ, New neotropical 92
Crabro clavipes exhibited 72
Diptera destructive to cereals in Britain 192
Dolerus, Larvæ of, causing damage to grass 91
Drosophila cellaris destructive to pickles 116
Dufourea vulgaris from Woking 192
Dyscolethes, A new genus of Hymenoptera 92
Ecuador, New Rutelidæ from 191
„ Papilionidæ from 92
Encyrtidæ, Species of, parasitic on Zeuzera æsculi 116
Ennomos tiliaria, Variety of 192
Euchroma, Species of 92
Eumolpidæ, New 117
Euthyplocia, Nymph of 116
Fig insects, Remarks on 192, 279
Fiji, Damage to cocoa-nut trees by Lopaphus in 191
Formica umbrata, var. mixta, Occurrence in Britain of 191
Gastrophysa raphani, Parthenogenesis in 191
Halticella osmicida, Sexes of 279
„ , Terminal segments of 280
Harpalus cupreus in the Isle of Wight 192
„ discoideus, British specimen of 191
Hawaiian Islands, Lepidoptera from 279
„ „ New Coleoptera from the 191
Heliconius Charitonia, Sexual instinct in 280

PAGE
Honey-comb built against a wall .. 192
Hymenoptera, Mounting and preservation of .. 191, 280
„ New species of .. 191
Iceland, Porcellio scaber from .. 192
Ichneumon erythræus captured in quantity .. 280
Ichneumonidæ, New or rare British .. 117
Iodis vernaria, Oviposition of .. 92
Japan, Heterocerous Lepidoptera from .. 20, 92, 192
Lepidoptera from Chili .. 47, 192
„ „ the Amazons .. 92
„ „ „ Hawaiian Islands .. 279
„ , Heterocerous, from Japan .. 20
Lepidopterous larvæ forming cases of dog's excrement .. 192
Lilies, Larva of Brachycerus (?) destructive to .. 192
Locusts, Report of Committee on parasite of .. 91, 117, 192
Longicorn Coleoptera, New .. 92
Lopaphus coccophagus damaging cocoa-nut trees in Fiji .. 191
Lycæna Icarus, var. Icaroides, exhibited .. 192
Macromela Balyi exhibited .. 279
Molorchus minor exhibited .. 72
Morpho Adonis, Female of .. 91
Myrmeleonidæ, Larva of, from Zante, found living in England .. 192
New Zealand, Coleoptera from .. 280
Notiophilus biguttatus, Abnormal .. 191
Nycteribia, Larva of .. 92
Œstridæ, Species of, parasitic on a mouse .. 117
Orchestes damaging elm .. 91
Orthezia, The genus .. 72, 92
Ourapteryx sambucaria, Variety of .. 191
Papilio americus with abnormal neuration .. 191
„ Cenæa, Stoll., The sexes of, taken *in copulâ* .. 20
Papilionidæ from Ecuador .. 92
Parthenogenesis in Gastrophysa raphani .. 191
Pentatomidæ and Coreidæ, New neotropical .. 92
Phora rufipes parasitic on Nematus ribesii .. 192
Phylloxera in Victoria, Report of Committee respecting .. 20, 72
Porcellio scaber from Iceland .. 192
Prosopis, Terminal segments of .. 280
Rhopalocera from South Africa, New .. 92
Rhynchota from Australia .. 72
Rutelidæ from Ecuador, New .. 191
Scenopinus fenestralis bred from aconite .. 192
Scleroderma, Notes on .. 192
South Africa, New Rhopalocera from .. 92
„ „ Tineidæ, Tortricidæ, and Pterophoridæ of .. 72
Strenia clathrata, Variety of .. 279
Sumatra, New Coleoptera from .. 117
Telephorus lituratus, Variety of .. 192
Tinea vastella (gigantella) feeding on a horse's hoof .. 20
Tortricidæ, Tineidæ, and Pterophoridæ of South Africa .. 72
Trichoptera, Collection of British, exhibited .. 280

SPECIAL INDEX.

COLEOPTERA.

PAGE
Acidota crenata 188
Aëpus marinus 71
Agathidium rhinoceros 188
Aleochara cuniculorum 234
Amara Quenseli 188
Anchomenus Helmsi (sp. n.), Sharp 47
Anthophagus alpinus 188
Anthribus albinus 40
Aphodius porcus 158
    Zenkeri 158
Athous difformis 19, 139
Atomaria atra 234
Bembidium 5-striatum 278
Cænopsis fissirostris 19, 40
Calosoma inquisitor 187
Carabus Steuarti 230
Cassida nobilis 278
    vittata 214
Ceratorhina Burkei, var. histrio, H. W. Bates 157
    Euthalia (sp. n.), „ 156
    princeps „ „ 156
Ceuthorhynchideus Chevrolati 18
Chlænius gallæcianus 231
Choragus Sheppardi 112
Chrosis violacea (sp. n.), Sharp 49
Cicindela campestris, var. maroccana 230
Corticaria curta 262
    fulvipes 262
    transversalis 261
    Wollastoni 261
Demetrias monostigma 158
Dromius 4-signatus 277
Eccoptocnemis relucens (sp. n.), H. W. Bates 157
Eustra plagiata 39
Gastrophysa raphani, Parthenogenesis in 128
Gymnusa variegata 213
Gyrinus natator, Parasites on 88
Haliplus obliquus 8
Haplocnemus nigricornis 113
Harpalus discoideus 112
    4-punctatus 188
    servus 19
Heterorhina elongata (sp. n.), H. W. Bates 157
    lævicauda, „ „ 157
    tricolor, „ „ 157

PAGE
Homalota princeps 70
Hydaticus transversalis 9
Hydnobius strigosus 188
Hydræna palustris 9
Hydroporus decoratus 8
    oblongus 8
    rufifrons 8
    Scalesianus 8
Hypselogenia corrosa (sp. n.), H. W. Bates 156
Ilyobates nigricollis 234
Lamia textor 113
Lebia crux-minor in Japan 188
Limnobius picinus 9
Lissotes Helmsi (sp. n.), Sharp 49
Meligethes morosus 112
    viduatus 158
Meloë variegata 277
Micralymma brevipenne 140
Miscodera arctica 188
Mordella fasciata 113
Necrophilus prolongatus (sp. n.), Sharp 47
Notiophilus 4-punctatus 40
Ocypus fuscatus 278
Ocyusa picina 213
Oryctes nasicornis in Britain 262
Oxytelus fulvipes 213
Philonthus discoideus 234
    thermarum 234
Phytosus balticus 158
    spinifer 158
Plæsiorhina undulata (sp. n.), H. W. Bates 157
Platyrhinus latirostris 112
Polystichus vittatus 235
Protelater nigricans (sp. n.), Sharp 50
Pselaphus dresdensis 9
Ptenidium formicetorum 234
Pterostichus vulgaris in frog's stomach 188
Ptinella denticollis 276
Quedius auricomus 113
Rhagium inquisitor 18
Rhynchites cupreus 139
Scaphodius compactus (sp. n.), Sharp 50
Stenus Guynemeri 113
Tachinus pallipes 188
    proximus 188
Tachyusa coarctata 40
Trechus lapidosus 71
Trichopteryx picicornis 234
Zeatyrus Lawsoni (sp. n.), Sharp 48

DIPTERA.

Anthomyiidæ, British 1, 27, 62, 101, 123, 172, 201, 221
Ascia flavalis 151
Azelia 221
  aterrima 223
  gibbera 223
Calliphora grœnlandica 152
Chrysogaster splendida 151
Cœlomyia 223
  mollissima 224
Ctenophora ornata 89
Drymeia 172
  hamata 172
Graphomyia picta 151
Gymnopternus assimilis 151
  chalybeus 150
Henops gibbosus 89
Homalomyia 201
  aprica 202
  armata 203
  canicularis 202
  carbonaria 205
  floricola 205
  fuscula 202
  herniosa 204
  incisurata 202
  manicata 203
  mutica 204
  pallitibia 202
  scalaris 202
  serena 204
  sociella 204
  spissata (sp. n.), Meade 203
Hydrophoria 102
  ambigua 102
  anthomyia 103
  brunneifrons 103
  caudata 103
  divisa 102
  socia 104
Hydrophorus bipunctatus 151
  viridis 151
Hydrotæa 123
  armipes 124
  cyrtoneurina 123
  dentipes 124
  fasciculata (sp. n.), Meade 125
  irritans 124
  meteorica 124

Hyetodesia 2
  dispar 3
  dubia (sp. n.), Meade 4
  serva 3
  scutellaris 3
  vagans 3
Hylemyia 265
  antiqua 268
  cardui 267
  cinerella 268
  cinerosa 268
  coarctata 269
  flavipennis 266
  hilaris 266
  lasciva 266
  nigrescens 268
  nigrimana 269
  operosa 269
  præpotens 269
  puella 269
  pullula 268
  seticrura 267
  strigosa 269
  tibiaria 270
  variata 266
  virginea 266
Limnophora 101
  compuncta 101
  contractifrons 101
  septemnotata 102
  triangulifera 101
Morellia curvipes 152
Mydæa 27
  allotalla 28
  angelicæ 28
  flaveola 28
  nigritella 27
  separata 28
  urbana 28
Ophyra 173
Piezura 221
  pardalina 221
Platychirus fulviventris 151
Pogonomyia 172
  alpicola 172
Polietes 2
Sericomyia borealis 159, 189, 190
Spilogaster 62
  communis 64
  consimilis 65
  depuncta 65
  duplaris 63

PAGE
Spilogaster maculosa 62
    notata 62
    quadrimaculata 63
    quadrum 64
Trichophthicus 173
    cunctans 174
    pulcher (sp. n.), Meade ... 175
    rostratus „ „ ... 176
    semipellucidus 175
Thyreophorus antipodum (sp. n.), Osten-Sacken... 35

HEMIPTERA.

Acanthococcus aceris, ♂ apterous 250
Acocephalus polystolus........................ 276
Acompocoris alpinus 113
Aëpophilus Bonnairei 145
Agalliastes Wilkinsoni, macropterous ... 276
Anoterops setulosus 113
Aphalara artemisiæ 254
    calthæ.............................. 254
    exilis 254
    nebulosa 254, 275
    nervosa 18, 254
    picta 254, 276
Arytæna genistæ 255
Athysanus piceus 276
    russeolus 276
Bergia nimbata 155
Cerataphis lataniæ.............................. 275
Ceratocombus coleoptratus 113
Chilacis typhæ 113
Cicada montana 140
Coccidæ, American 263
Corizus maculatus 140
Corixa carinata 276
Cryptostemma aliena 113
Deltocephalus distinguendus 67
    Flori 66, 140
    I-album (sp. n.), Scott 137
    Normani „ „ 105
    picturatus 276
    repletus 66
Dicranotropis hamata, macropterous 276
Doratura stylata, macropterous 276
Euides fuscovittata (sp. n.), Scott 155
Gastrodes abietis 18
Gerris aspera 18
Gossyparia ulmi, ♂ apterous 250
Idiocerus fulgidus 53
    varius 52
Lasiosomus enervis 161

PAGE
Liburnia Bergi = L. cognata, Berg. 156
    discolor, macropterous 276
    insignis (sp. n.), Scott 270, 076
    mesomela, macropterous 276
    v-flava (sp. n.), Scott.............. 104
Livia juncorum 254
Livilla ulicis 255
Myrmedobia tenella 276
Orthezia cataphracta, ♂ developed 276
    floccosa 276
Orthotylus fuscescens 276
Pediopsis fuscinervis 54
    nassatus 54
Podisus luridus 113
Pœciloscytus Gyllenhali, macropterous ... 276
Psylla alni 255
    betulæ 255
    buxi 18, 255
    costalis.................................... 254
    costatopunctata 254
    cratægi.................................... 255
    Försteri 255
    Hartigi 255
    hippophaës 255
    Loewi 255
    mali 254
    peregrina.................................. 254
    pineti 255
    pruni 254
    pyricola 254
    pyrisuga 254
    rhamnicola 255
    salicicola 255
    simulans 254
    spartii 255
    stenolabis................................ 255
    visci 111, 255
Psyllopsis fraxini 254
    fraxinicola................................ 254
Rhinocola aceris................................ 254
    ericæ 254
Ritsemia pupifera, ♂ apterous............ .. 250
Sehirus biguttatus 40, 140
    luctuosus 41
Tetrura rubi 275
Trichopsylla Walkeri 255
Trioza abdominalis 255, 276
    acutipennis 255
    albiventris 255
    crithmi 268, 276
    Dalei.. 255
    galii 255, 276

PAGE
Trioza munda ... 255
  remota ... 255
  rhamni ... 255
  salicivora ... 255
  urticæ ... 255
  viridula ... 255
Zicrona cœrulea ... 113

HYMENOPTERA.

Agenia variegata ... 262
Andrena austriaca ... 114, 262
  decorata ... 114
  erythronota ... 167
  extricata ... 42
  fasciata ... 42
  granulosa ... 167
  Hattorfiana ... 262
  lapponica ... 42
  lithurgoides ... 167
  nigriceps ... 114
  obsoleta ... 167
  Pandellæi ... 167
  puncticollis ... 167
  simillima ... 262
  tridentata ... 114
Anthophora femorata ... 171
  Thomsoni (sp. n.), E. Saunders 171
Aporus bicolor ... 262
Astata stigma ... 113
Blennocampa sulcata (sp. n.), Cameron ... 271
Bombus cullumanus ... 161
  Schrimshiranus ... 114
  soroensis ... 160, 262
Camptopœum frontale ... 169
Ceramius lusitanicus ... 166
Colletes marginata ... 166
  picistigma ... 161, 199
Crœsus Varus ... 127
Dasypoda cingulata ... 167
  Eatoni (sp. n.), E. Saunders ... 168
Dineura Degeeri ... 127
Dioxys pyrenaica ... 170
Dufourea vulgaris ... 161
Epeolus productus ... 114, 200
Eucera collaris ... 170
  hispanica ... 170
  semistrigosa ... 170
Fenusa hortulana ... 127
Formica sanguinea ... 262

PAGE
Halictus costulatus ... 166
  platycestus ... 166
  quadricinctus ... 160
Hemichroa alni ... 126
  rufa ... 127
Hemiteles gyrini (sp. n.), Parfitt ... 79, 88
  litoreus „ „ ... 272
  persector „ „ ... 185
Heptamelus ochroleucus ... 272
Hoplisus latifrons ... 165
Limneria affinis (sp. n.), Parfitt ... 252
Mesoleius brachyacanthus (sp. n.), Parfitt 78
  elegans „ „ 273
Mutilla europæa ... 114
Nematus Bergmanni ... 193
  croceus ... 127
  curtispina ... 125
  glutinosæ (sp. n.), Cameron ... 193
  lacteus ... 195
  miliaris ... 194
  palliatus ... 195
  salicis ... 127
  salicivorus (sp. n.), Cameron ... 194
Neuroterus lenticularis ... 225
Odynerus basalis ... 262
  Dufouri ... 165
Osmia pilicornis ... 262
Oxybelus mandibularis ... 114
  mucronatus ... 114
Panurginus montanus ... 169
Panurgus Perezi (sp. n.), E. Saunders ... 169
  proximus „ „ ... 168
Parastatis indica (g. et sp. n.), Kirby ... 107
Phyllotoma ochropoda ... 127
Polyblastus Bridgmani (sp. n.), Parfitt ... 251
Prosopis dilatata ... 114
Pterochilus phaleratus ... 166
Spathogaster baccarum ... 225
Sphecodes, British species of ... 198
  ephippium ... 198
  gibbus ... 198
  pilifrons ... 198
  puncticeps ... 198
  rufiventris ... 198
  similis ... 198
  subquadratus ... 198
Stelis phæoptera ... 262
Strongylogaster macula ... 272
  viridis ... 272
Tenthredo scotica (sp. n.), Cameron ... 193

LEPIDOPTERA.

PAGE
- Acentropus niveus ... 17
- Acherontia Atropos ... 96, 260
- Acidalia emutaria ... 241
  - immutata ... 109, 240
  - straminata ... 68
- Acontia lucida ... 99
- Agdistis tamaricis? ... 259
- Agraulis moneta ... 85
  - vanillæ ... 85
- Agrophila sulphuralis ... 13, 99
- Agrotis Ashworthi ... 162
  - fennica ... 82
  - saucia ... 243
- Amblyptilia acanthodactyla ... 117, 212
  - cosmodactyla ... 117, 177, 213
  - pica ... 117
  - punctidactyla ... 117, 212
- Amphidasis betularia ... 61
  - prodromaria ... 239
- Anartia jatrophæ ... 85
- Anerastia Farrella ... 211, 217, 219
- Anisopteryx æscularia ... 34, 210
- Antheræa macrophthalmus (sp. n.), Kirby 146
- Anthocharis Belia ... 31
- Apamea fibrosa ... 110
- Aplecta herbida ... 39, 209
- Aporia cratægi ... 30
- Arctia Dodgei (sp. n.), Butler ... 134
  - Hebe ... 98
  - ochreata (sp. n.), Butler ... 134
  - purpurata ... 98
  - rhoda (sp. n.), Butler ... 134
- Argyrophorus argenteus ... 83
- Argynnis Daphne ... 94
  - Lathonia ... 94
  - Pandora ... 12, 94
  - Paphia ... 94, 188
- Asthenia scopariana ... 278
- Boletobia fuliginaria ... 68, 108, 109
- Botys lancealis ... 38, 240
  - sanguinalis ... 13, 100
- Brachytænia Woodiana (sp. n.), Barrett ... 185
- Brephos Parthenias ... 239
- Callidryas Drya, Larva of ... 219
  - Statira ... 85
- Callimorpha Hera ... 98
- Catocala conjuncta ... 99
  - conversa ... 99
  - hymenæa ... 99
- Catoptria candidulana (Wimmerana) ... 141
- Celæna Haworthi ... 110

PAGE
- Cerostoma asperella ... 111
- Cerura erminea, Larva of ... 161
  - furcula ... 209
  - vinula ... 34, 161
- Cethosia Logani (sp. n.), Distant ... 134
- Chœrocampa celerio ... 258
  - elpenor ... 38
- Charæas graminis ... 39, 68, 86, 111
- Charaxes Carteri (sp. n.), Butler ... 108
  - cedreatis ... 108
  - Kirkii (sp. n.), Butler ... 145
- Cheimatobia boreata ... 211
- Chortobius Davus ... 68
- Chrysocorys erythriella ... 73
  - felicella ... 73
  - festaliella ... 73
- Cledeobia moldavica ... 100
- Coleophora adjunctella (sp.n.), Hodgkinson 189
  - apicella ... 141
  - olivaceella ... 16
- Colias Edusa ... 31, 210
  - Lesbia ... 82
  - Vautieri ... 82, 83
- Collix sparsata ... 110, 240
- Coremia quadrifasciaria ... 241
- Corycia taminata ... 240
  - temerata ... 38
- Cosmia pyralina ... 88
- Crambus margaritellus ... 68
  - paludellus ... 110
  - Warringtonellus, Larva of ... 129
- Cymatophora flavicornis ... 239
  - ocularis ... 241
- Danais Archippus ... 82, 85
  - Chrysippus, var. Alcippus ... 81
- Deilephila Alecto, Larva of ... 97
  - euphorbiæ ... 96
  - livornica ... 96
  - spinifascia, Larva of ... 131
- Deiopeia pulchella ... 81, 98
- Depressaria cnicella ... 141
- Diasemia literalis ... 69
- Dichrorhampha distinctana ... 278
- Drepana sicula ... 87, 108, 141, 233
- Elachista apicipunctella ... 210
  - humilis ... 16
  - perplexella ... 16
- Emmelesia blandiata, Larva of ... 180
- Emydia striata ... 98
- Ennomos alniaria ... 87
- Ennychia octomaculalis ... 69
  - , Larva of ... 57

PAGE
Epischnia (Anerastia) Farrella 217
Lafauryella 217, 218
Erastria fuscula 240
Euchromia ericetana 110, 242
Eudorea conspicualis (sp. n.), Hodgkinson 134
pallida 109
Eulepia grammica 212
Eupithecia consignata 39
inturbata, Larva of 142
jasioneata (sp. n.), Crewe ... 80, 87
, Larva of 80
linariata 241
subciliata, Larva of 142
Eupœcilia ambiguella 152
Geyeriana 110
Manniana 242
Mussehliana 70
pallidana 242
udana 241
Eurycreon sticticalis 100
Gelechia brizella, Larva of 56
malvella 219
scotinella 143
Grammodes algira 99
bifasciata 99
Gymnancyla canella 141
Hadena rectilinea ... .209
Heliothis armiger 12, 81, 99, 141, 258
Hepialus humuli 111
velleda, var. carnus 210
Hesperia Actæon 96
nostrodamus 96
Thaumas 96
Himera pennaria 210
, Larva of 33, 38
Hydrœcia nictitans, Larva of 195
Hypenodes costæstrigalis 242
Hyria auroraria 68
Ino ampelophaga 98
Junonia Lavinia 85
Larentia didymata 68
Lasiommata Xiphia 257
Leiocampa dictæoides 110, 209
Leucania congrua 99
phragmitidis 242
pudorina 110
straminea 110
unipuncta 81
Leucanitis stolida 99
Limenitis Camilla 92
Lithosia caniola 98
griseola 110
muscerda 110
stramineola 110
Lobesia reliquana 239
Lozotænia latiorana 260
Lycæna Admetus 32
Amanda 32
Argiades 32
bætica 32
Lycæna semiargus 92
Telicanus 92
Lythria purpuraria 100
Macroglossa croatica, Larva of 97
stellatarum 97
Margarodes unionalis 100
Melanargia Larissa 12, 13, 94
Melitæa Artemis 70
Cinxia 93
didyma 94
Phœbe 93
trivia 13
, Larva of 93
Miana expolita „ 76
Mimæseoptilus aridus 179
bipunctidactylus 178
Hodgkinsoni 212
Loewii 180, 212
plagiodactylus 178
serotinus 178
zophodactylus 180
Nemeobius Lucina 38
Nepticula agrimoniæ 211
sericopeza 142
Nisoniades Marloyi 96
Nola centonalis 87
cristulalis 38
Nonagria brevilinea 110
despecta 109, 240
neurica 110
Notodonta cucullina 88
dictæa 211
dictæoides 110, 209
Nudaria senex 110
Oporabia autumnaria 210
dilutata 87, 88
filigrammaria 88
Ophthalmophora bella (sp. n.), Butler ... 60
Lucilla „ „ ... 60
Orobena frumentalis 100
Orthosia suspecta 242
Orthotænia ericetana 110, 242
Oxyptilus distans 178
hieracii 177
lætus 178
obscurus 177
punctidactylus 177
Papilio Archidamas 83
Machaon 29, 110
, Larva of 244
Podalirius 29
Pararge Mæra 95
Roxelana 12, 95
Pellonia calabraria 100
Peronea Lorquiniana 110
Phlæodes Demarniana 241
Phorodesma neriaria 100
Pieris Daplidice 30
, Larva of 31
napi 110

PAGE
Platyptilia cardui ... 74
cervinidactyla ... 74, 75
dichrodactyla ... 75, 143, 177
gonodactyla ... 177
modestus ... 74
ochrodactyla ... 177
orthocarpi ... 74
trigonodactyla ... 177
Plodia interpunctella ... 241
Plusia orichalcea ... 109
Plutella Dalella ... 210
Pœcilocampa populi ... 38
Polyommatus Alciphron ... 32
Phlœas ... 32
v. Eleus ... 32
Thersamon ... 32
Polyphænis sericata ... 99
Psyche calvella ... 17
opacella ... 17
Pyrameis Carye ... 82, 83, 85
Huntera ... 82
Rhodocera Cleopatra ... 31
Rivula sericealis ... 240
Saturnia pyri ... 99
Satyrus Briseis ... 94
Hermione ... 94
Statilinus, var. Allionia ... 95
Schœnobius mucronellus ... 110
Schrankia turfosalis ... 242
Scoparia truncicolella, Larva of ... 106
Scopula lutealis, „ „ ... 147, 189
prunalis, „ „ ... 189
Scotosia undulata ... 240
Semasia populana ... 243
Simyra venosa ... 110
Smerinthus populi ... 97, 209, 211
Sphinx convolvuli ... 96, 209, 243
Spilosoma urticæ ... 110
Spilothyrus alceæ, Larva of ... 95
altheæ ... 96
Spintherops spectrum ... 99
Sterrha sacraria ... 100
Stigmonota internana ... 240
perlepidana ... 240
Syrichthus orbifer ... 96
Sao ... 96
serratulæ ... 96
sidæ ... 96
Tæniocampa rubricosa ... 239
Tephrosia biundularia ... 274
crepuscularia ... 274
Teracolus Antigone ... 228
Arethusa ... 228
Carteri (sp. n.), Butler ... 227
coniger „ „ ... 229
incretus „ „ ... 146
minans „ „ ... 229
Ocale ... 228
Phlegetonia ... 230
Tethea retusa ... 110
subtusa ... 242
Thais Cerisyi ... 13
, Larva of ... 29

PAGE
Thalera fimbrialis ... 100
Thalpochares ostrina ... 99
parva ... 99
Thecla betulæ ... 38
ilicis ... 31
pruni ... 38
w-album ... 68
Tinea argentimaculella ... 16, 17
Trichiura cratægi ... 38
Triphæna subsequa ... 209, 210
Tortrix Lafauryana ... 17, 242, 260
Trochilium scoliiforme ... 162
Vanessa Atalanta ... 93
Antiopa ... 18, 93
c-album ... 93
cardui ... 93
polychloros ... 93
Venusia cambrica ... 210
Xylophasia scolopacina ... 240
Zygæna læta ... 98
pilosellæ (Minos) ... 98
punctum ... 98
sedi ... 98

NEUROPTERA.

Anax ephippiger ... 258
Atopopus (g. n.) Eaton ... 22
Calliarcys „ „ ... 21
Chirotonetes „ „ ... 21
Compsoneuria „ ... 23
Bittacus chlorostigma (sp. n.), McLach ... 36
Cænis maxima ... 71
Dilar americanus (sp. n.), McLach ... 55
Ecdyurus ... 25
Epeorus (g. n.), Eaton ... 26
torrentium (sp. n.), Eaton ... 26
Hagenulus (g. n.), Eaton ... 207
caligatus ... 207
Leptohyphes (g. n.), Eaton ... 208
eximius (sp. n.), Eaton ... 208
Limnophilus subcentralis ... 72
Mucropalpus fallax ... 89, 140
Neurorthus iridipennis ... 89, 140
Œcetis furva ... 163
Pægniodes (g. n.) Eaton ... 23
Panorpodes oregonensis (sp. n.), McLach. 37
paradoxa ... 37
Polycentropus Kingi ... 163
Rhithrogenia (g. n.) Eaton ... 23
Sartena amœna ... 89, 140
Setodes argentipunctella ... 163
Stenophylax rotundipennis ... 163
Teloganodes (g. n.), Eaton ... 208
Thalerosphyrus „ „ ... 22

THYSANURA.

Degeeria = Entomobrya ... 19, 43
Lepisma Eatoni (sp. n.), Ridley ... 14
mauritanica ... 14

INDEX TO CONTRIBUTORS.

PAGE
Atmore, E. A. ... 17, 211, 239
Axon, W. E. A. ... 87
Barrett, C. G. ... 69, 70, 88, 109, 110, 111, 152, 177, 185, 188, 233, 260, 278
Bates, H. W., F.R.S., &c. ... 156, 230
Billups, T. R. ... 161, 234
Blatch, W. G. ... 112, 113, 140, 213, 276
Bloomfield, Rev. E. N., M.A. ... 141, 159
Bodemeyer-Heinrichau, E. von ... 111
Buckler, W. ... 17, 57, 76, 87, 129, 147, 180, 195, 244
Burton, F. M. ... 61
Butler, A. G., F.L.S., &c. ... 107, 135, 145, 227
Butler, E. A. ... 40, 113, 235
Cameron, P. ... 193, 271
Champion, G. C. ... 214
Collett, E. P. ... 19, 139, 140, 234
Collett, H. F. ... 139
Crewe, Rev. H. Harpur, M.A. ... 80
Dale, C. W. ... 89, 111
Distant, W. L., V.-P.E.S. ... 134
Douglas, J. W. ... 41, 140, 236
Dunbar, L. D. ... 260, 262
Eaton, Rev. A. E., M.A. ... 21, 71, 207
Edwards, J. ... 51
Elliot, A. ... 209
Fletcher, J. E. ... 126, 127, 143
Fletcher, W. H. B. ... 211
Forbes, W. A., M.A., F.L.S. ... 15
Fowler, Rev. W. W., M.A., F.L.S. ... 7, 18, 70, 112, 158, 188, 261, 277
Grigg, W. H. ... 87, 108
Gutheil, A. ... 111
Hagen, Prof. H. A. ... 140
Hellins, Rev. J., M.A. ... 33, 86, 88, 190, 260
Hodgkinson, J. B. ... 134, 189, 212
Hodgson, A. E., B.A. ... 186, 188
Inchbald, P., F.L.S. ... 68
Jones, A. H. ... 39
Jordan, R. C. R., M.D. ... 73, 117
Kenrick, G. H. ... 162
King, J. J. ... 72, 163
Kirby, W. F. ... 107, 146
Lewis, G. ... 89, 138, 188, 213
Lichtenstein, J. ... 224, 250, 275
Llewelyn, J. T. D., M.A., F.L.S. ... 274
McLachlan, R., F.R.S., &c. ... 36, 43, 55, 89, 205, 237, 278
Malpas, J. ... 109
Mann, W. K. ... 141
Mathew, G. F., R.N., F.L.S., &c. ... 29, 92, 131, 210, 211, 256
Meade, R. H. ... 1, 19, 27, 62, 101, 123, 177, 201, 221, 265
Meek, E. G. ... 87, 219
Moncreaff, H. ... 56
Norman, G. ... 18, 67, 276
Ollivant, J. E. ... 18
Osborne, J. A., M.D. ... 128
Osten-Sacken, Baron C. R. ... 35, 114
Parfitt, E. ... 43, 78, 184, 251, 272
Pasley, T. E. S. ... 88
Pergande, T. ... 235
Piffard, B. ... 40, 68
Pim, H. B. ... 112
Porritt, G. T., F.L.S. ... 38, 68, 106, 182, 189
Ridley, H. N., M.A. ... 14
Rothney, G. A. J. ... 262
Sang, J. ... 143
Saunders, E., F.L.S. ... 42, 113, 165, 197
Saunders, Sir S. S., C.M.G. ... 160
Savage, F. W. ... 214
Scott, J. ... 18, 65, 104, 137, 154, 253, 263, 270, 275, 276
Sharp, D., M.B. ... 46, 159, 230
Smith, F. W. ... 108, 109
Smith, W. G., F.L.S. ... 263
Speyer, Dr. A. ... 142
Stainton, H. T., F.R.S., &c. ... 141, 161, 217
Swinton, A. H. ... 189
Threlfall, J. H. ... 16
Tugwell, W. H. ... 87
Verrall, G. H. ... 149
Walker, J. J., R.N. ... 81
Warren, W. ... 142
Waterhouse, C. O. ... 145
Wellman, J. R. ... 68, 109
Williams, Rev. H., M.A. ... 212
Wood, Th. ... 158, 277

LIST OF NEW GENERA AND SPECIES, &c., DESCRIBED IN THIS VOLUME.

COLEOPTERA.

PAGE
GENUS.
ZEATYRUS, *Sharp* ... 48

SPECIES.
Anchomenus Helmsi, *Sharp, N. Zealand* 47
Ceratorhina Burkei, var. histrio, *H. W. Bates, E. Africa* 157
Euthalia, ,, ,, 156
princeps, ,, ,, 156
Heterorhina elongata, *H. W. Bates, E. Africa* 157
lævicauda, ,, ,, 157
tricolor, ,, ,, 157
Hypselogenia corrosa, ,, ,, 156
Lissotes Helmsi, *Sharp, N. Zealand* ... 49
Necrophilus prolongatus, *Sharp, N. Zealand* 47
Plæsiorhina undulata, *H. W. Bates, E. Africa* 157

DIPTERA.

SPECIES. PAGE
Homalomyia spissata, *Meade, England* .. 203
Hydrotæa fasciculata, „ „ . 125
Rondanii, „ „ ... 125
Hyetodesia dubia, „ „ ... 4
Thyreophora antipodum, *Osten-Sacken, Tasmania* 35
Trichophthicus pulcher, *Meade, England* 175
rostratus, „ „ ... 176

HEMIPTERA.

GENUS.
Bergia, *Scott* ... 155
Ceratapnis, *Licht.* ... 275
Tetrura, „ ... 275

SPECIES.
Deltocephalus I-album, *Scott, England*... 137
Normani, „ *Scotland*... 105
Euides fuscovittata, *Scott, Buenos Ayres* 155
Liburnia insignis, „ *Scotland* 270
v-flava, „ *England* 104

HYMENOPTERA.

GENUS.
Parastatis, *Kirby* ... 107

SPECIES.
Anthophora Thomsoni, *E. Saunders, Portugal* 171
Blennocampa (Monophadnus) sulcata, *Cameron, Scotland* 271
Dasypoda Eatoni, *E. Saunders, Portugal* 168
Hemiteles gyrini, *Parfitt, England* 79
litoreus, „ „ 272
persector, „ „ 185
Limneria affinis, „ „ 252
Mesoleius brachyacanthus, *Parfitt, England* 78
elegans, *Parfitt, England* 273
Nematus glutinosæ, *Cameron, Scotland*... 193
salicivorus, „ „ 194
Panurgus Perezi, *E. Saunders, Portugal* 169
proximus, „ „ 168
Parastatis indica, *Kirby, India* 107
Polyblastus Bridgmani, *Parfitt, England* 251
Tenthredo scotica, *Cameron, Scotland* ... 193

LEPIDOPTERA.

SPECIES.
Antheræa macrophthalmus, *W. F. Kirby, Gold Coast* 146
Arctia Dodgei, *Butler, N. America* 136
ochreata, „ *United States* ... 136
rhoda, „ „ ... 136
Brachytænia Woodiana, *Barrett, England* 185
Cethosia Logani, *Distant, Prov. Wellesley* 134
Charaxes Carteri, *Butler, Accra*............ 108
Kirkii, „ *Mamboia* 145
Eudorea conspicualis, *Hodgkinson, England* 134
Eupithecia jasioneata, *Crewe*, „ 80
Ophthalmophora bella, *Butler, Limas* ... 60
Lucilla, „ *R. Janeiro.* 60
Teracolus Carteri, „ *Accra* 227
coniger, „ „ 229
incretus, „ *Mamboia*... 146
minans, „ *Accra* 229

NEUROPTERA.

GENERA.
Atopopus, *Eaton* ... 22
Calliarcys, „ ... 21
Chirotonetes, *Eaton* ... 21
Compsoneuria, „ ... 23
Epeorus, „ ... 26
Hagenulus, „ ... 207
Leptohyphes, „ ... 208
Pægniodes, „ ... 23
Rhithrogenia, „ ... 23
Teloganodes, „ ... 208
Thalerosphyrus, „ ... 22

SPECIES.
Atopopus tarsalis, *Eaton, Labuan* 22
Bittacus chlorostigma, *McLachlan, S. California* 36
Calliarcys humilis, *Eaton, Portugal* 21
Compsoneuria spectabilis, *Eaton, Lahat*.. 23
Dilar americanus, *McLachlan, Kentucky* 55
Epeorus torrentium, *Eaton, S. France* ... 26
Hagenulus caligatus, „ *Cuba* 207
Leptohyphes eximius, „ *Cordova* ... 208
Panorpodes oregonensis, *McLachlan, Oregon* 37

THYSANURA.

SPECIES.
Lepisma Eatoni, *Ridley, Canary Islands* 14

ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD IN THIS VOLUME.

COLEOPTERA.

PAGE
Meligethes morosus, *Er.* ... 112

DIPTERA.

Azelia Macquarti, *Stäg.* ... 222
Zetterstedti, *Rond.* ... 223
Gymnopternus chalybeus, *Wiedm.* ... 150
Homalomyia carbonaria, *Rond.* ... 205
herniosa, „ ... 204
mutica, *Zett.* ... 204
pallitibia, *Rond.* ... 202
serena, *Fall.* ... 204
sociella, *Zett.* ... 201
spissata (sp. n.), *Meade*...... 203

PAGE
Hydrophoria ambigua, *Fall.* ... 102
anthomyia, *Rond.* ... 103
brunneifrons, *Zett.* ... 103
caudata, „ ... 103
linogrisea, *Meig.* ... 102
socia, *Fall.* ... 102
Hydrotæa cyrtoneurina, *Zett.* ... 123
fasciculata (sp. n.), *Meade* ... 125
Rondanii „ „ ... 125
Hyetodesia basalis, *Zett.* ... 2
dubia (sp. n.), *Meade* ... 4
lasiophthalma, *Macq.* ... 2
læta, *Fall.* ... 2
longipes, Zett. ... 2

PAGE
Hyetodesia marmorata, *Zett.* ... 2
rufipaplis, *Macq.* ... 2
variabilis, *Fall.* ... 2
Hylemyia cinerosa, *Zett.* ... 278
lasciva, „ ... 266
nigrescens, *Rond.* ... 268
operosa, *Meig* ... 269
puella, „ ... 268
seticrura, *Rond.* ... 267
Limnophora contractifrons, *Zett.* ... 101
septemnotata, „ ... 102
sororcula, „ ... 101
triangulifera, „ ... 101
Mydæa allotalla, *Meig.* ... 28
flaveola, *Fall.* ... 28
nigricolor, „ ... 27
nigritella, *Zett.* ... 27
tincta, „ ... 27
Piezura pardalina, *Rond.* ... 221
Pogonomyia alpicola, *Rond.* ... 172
Spilogaster communis, *Desv.* ... 64
consimilis, *Fall.* ... 65
duplaris, *Zett.* ... 63
duplicata, *Meig.* ... 63
flagipes, *Rond.* ... 65
fuscata, *Fall.* ... 65
nigrinervis, *Zett.* ... 62
Trichophthicus pulcher (sp. n.), *Meade* . 175
rostratus „ „ ... 176
semipellucidus, *Zett.* ... 175

HEMIPTERA.

Aëpophilus Bonnairei, *Sign.* ... 145
Athysanus russeolus, *Fall.* ... 276
Deltocephalus distinguendus, *Flor* ... 67
Flori, *Fieb.* ... 66, 140
I-album, *Scott* ... 137
PAGE
Deltocephalus Normani, *Scott* ... 105
picturatus, *Fieb.* ... 276
repletus, „ ... 66
Idiocerus varius, *Fab.* ... 53
Liburnia insignis, (sp. n.), *Scott* ... 270
v-flava, *Scott* ... 104
Trioza crithmi, *F. Löw* ... 276

HYMENOPTERA.

Blennocampa sulcata, *Cameron* ... 271
Colletes picistigma, *Thoms.* ... 199
Epeolus productus, „ ... 200
Halictus brevicornis, *Schenck* ... 199
Hemiteles gyrini (sp. n.), *Parfitt* ... 79
litoreus „ „ ... 272
persector „ „ ... 185
Limneria affinis „ „ ... 252
Mesoleius brachyacanthus (sp. n.), *Parfitt* 78
elegans, „ „ 273
Nematus glutinosæ (sp. n.), *Cameron* ... 193
salicivorus „ „ ... 194
Polyblastus Bridgmani (sp. n.), *Parfitt*... 251
Sphecodes puncticeps, *Thoms.* ... 198
similis, *Wesm.* ... 198
Strongylogaster macula, *Klug.* ... 272
Tenthredo scotica (sp. n.), *Cameron* ... 193

LEPIDOPTERA.

Brachytænia Woodiana (sp. n.), *Barrett.* 185
Coleophora adjunctella „ *Hodgk.*.. 189
Dichrorampha distinctana, *Hein.* ... 278
Eudorea conspicualis (sp. n.), *Hodgk.*... 134
Eupithecia jasioneata „ *Crewe* ... 80
Gelechia scotinella, *H.-S.* ... 143
Nepticula agrimoniæ, *Hey 'en* ... 211
Tortrix Lafauryana, *Ragonot* ... 17

LARVÆ OF BRITISH SPECIES DESCRIBED IN THIS VOLUME.

PAGE
Crambus warringtonellus, *Buckler* ... 129
Emmelesia blandiata, „ ... 180
Ennychia octomaculalis, „ ... 57
Eupithecia inturbata (subciliata), *Speyer.* 142
jasioneata, *Crewe* ... 80
Eupœcilia ambiguella, *Barrett* ... 152
Gelechia brizella, *Moncreaff* ... 56
Hydrœcia nictitans, *Buckler* ... 195
PAGE
Himera pennaria, *Hellins* ... 33
Miana expolita, *Buckler* ... 76
Nematus glutinosæ, *Cameron* ... 194
salicivorus, „ ... 195
Papilio Machaon, *Buckler* ... 244
Scoparia truncicolella, *Porritt* ... 106
Scopula lutealis, *Buckler* ... 147
Porritt ... 189

REVIEWS.

"Papilio," organ of the New York Entomological Club ... 20
The Micrographic Dictionary, 4th Edition ... 72
Bidrag till nordvestra Sibiriens Insektfauna. Coleoptera, Pt. i: J. Sahlberg ... 90
Hemiptera Argentina: C. Berg ... 90
Transactions of the Norfolk and Norwich Naturalists' Society ... 90
The Butterflies of Europe: H. C. Lang ... 91
Les Cynipides: J. Lichtenstein ... 215
Proceedings of the Perthshire Society of Natural Science ... 238
Report of the Entomologist of the U. S. Department of Agriculture, 1880: J. H. Comstock 263

OBITUARY.

PAGE
Baron de Chaudoir ... 20, 43
John Blackwall ... 20, 45
PAGE
C. G. A. Giebel ... 215
Jules Putzeys ... 215

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Description of the larva of Ennychia octomaculalis.—W. Buckler
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CONTENTS.

List of Lepidoptera observed in the neighbourhood of Gallipoli, Turkey, in 187
(concluded).—*Gervase F. Mathew, R.N., F.L.S., F.Z.S., &c.*
Annotated list of British Anthomyiidæ (continued).—*R. H. Meade*
On certain British Hemiptera-Homoptera.—*John Scott*
Description of the larva of Stegania trimaculata.—*G. T. Porritt, F.L.S.*
Description of a new genus and species of Tenthredinidæ.—*W. F. Kirby*
On 5 new species of Charaxes from West Africa.—*A. G. Butler, F.L.S., &c.*
Drepana sicula.—*W. H. Grigg*
Boletobia fuliginaria at Lewisham.—*F. W. Smith*
Further captures of Boletobia fuliginaria.—*Id.*
Boletobia fuliginaria in London.—*J. R. Wellman*
Plusia orichalcea in Pembrokeshire.—*J. Mabyn*
Nonagria despecta in Pembrokeshire.—*C. G. Barrett*
Singular variety of Pieris napi.—*Id.*
Captures of Lepidoptera in the Norfolk fens.—*Id.*
Curious variety of Hepialus humuli.—*Id.*
The ravages of Charæas graminis in Thuringia.—*A. Gutheil* (extracted)
Capture of rare Lepidoptera and Hemiptera in Hertfordshire.—*G. W. Dale*
A new mode of collecting *Coleoptera*, &c.—*E. von [illegible]*
(extracted)
Meligethes morosus, Er., a species new to Britain.—*Rev. W. W. Fowler, M.A., F.L.S.*
Harpalus discoideus, F.—*H. B. Pim*
Choragus Sheppardi in Warwickshire.—*W. G. Blatch*
Capture of Ceratocombus and Cryptostemma.—*Id.*
Notes on Hemiptera at Battle, &c.—*E. A. Butler*
Aculeate Hymenoptera at Hayling Island and Bournemouth.—*E. Saunders, F.L.S.*
A brief notice of Carl Ludwig Doleschall, the Dipterologist.—*C. R. Osten-Sacken*
Proceedings of the Entomological Society of London
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CONTENTS.

A comparison of the Pterophori of Europe and North America, suggeste
Lord Walsingham's "Pterophoridæ of California and Oregon," (conc
—R. C. R. Jordan, M.D. ....
Annotated list of British Anthomyiidæ (continued).—R. H. Meade ....
Notes on Tenthredinidæ.—J. E. Fletcher ....
On Parthenogenesis in Tenthredinidæ.—Id. ....
Further Notes on Parthenogenesis in Coleoptera.—J. A. Osborne, M.D. ....
Natural History of Crambus Warringtonellus.—W. Buckler ....
Life History of Deilephila spinifascia, Butler.—G. F. Mathew, F.L.S., &c.
Description of an Eudorea new to science (E. conspicualis).—J. H. Hodgk
Description of a new Butterfly from the Malay Peninsula.—W. L. Dis
F.E.S. ....
Descriptions of some apparently new species of Arctiidæ from North Ame
—A. G. Butler, F.L.S., &c. ....
On certain British Hemiptera-Homoptera (continued).—John Scott..........
The influence of volcanos on flying Coleoptera.—George Lewis ....
Coleoptera near Hastings.—E. P. and H. P. Collett ....
Note on Micralymma brevipenne.—W. G. Blatch ....
Deltocephalus Flori, Fieb., in England.—J. W. Douglas ....
Hemiptera at Hastings.—E. P. Collett ....
Sartena amoena.—Prof. H. A. Hagen ....
Drepana sicula.—W. E. Mann..
Heliothis armiger, Gymnancycla canella, &c.—Rev. E. N. Bloomfield, M.A. ..
Fruitless search for the larvæ of Coleophora apicella.—H. T. Stainton, F.R.S., &
Larva of Eupithecia interlutata, Hüb. (extracted).—Dr. A. Speyer ....
Occurrence of Nepticula sericopeza near Cambridge.—W. Warren ....
Occurrence of Gelechia scotinella, H.-S., in England.—J. E. Fletcher ......
Leaf-mining larvæ extracted by birds (?).—Id. ....
Platyptilia dichrodactyla and Bertrami.—John Sang ....
OBITUARY: W. Garneys..

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saunders, C.M.Z.S. ....
Dufourea vulgaris, Schk., at Woking.—T. R. Billups ....
[illegible], H.-S., at Weybridge.—Id. ....
A few words on the larva of Cerura erminea as distinguished from that of C.
vinula.—H. T. Stainton, F.R.S.
Re-occurrence of Trochilium scoliaeforme at Llangollen.—H. B. [illegible] ....
Agrotis Ashworthii at Penmaenmawr.—G. T. Porritt, F.L.S. ....
Occurrence of [illegible], Rbr., in Cumberland.—J. J. King ....
New locality for Polycentropus Kingi, McLach.—Id. ....
Setodes argentipunctella, McLach.—Id. ....
Stenophylax rotundipennis, Brauer, in Scotland.—Id. ....
La Société Française d'Entomologie.—Eds. ....
The Wiener entomologische Zeitung.—Ids. ....
Obituary: W. Garneys ....
John Bickerton Blackburn, B.A. ....
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Natural History of [illegible].—*William Buckler*
A new species of [illegible].—*C. Barrett*
Notes on British Tortrices.—*C. G. Barrett*
Notes on the past season, and on the occurrence of certain Lepidoptera and Coleoptera in the Forest of Dean.—*[illegible]*
Rare Coleoptera in Scotland.—*[illegible]*
[illegible] vulgaris, &c., in a Dog's stomach.—*Rev. W. W. Fowler, M.A., F.L.S.*
[illegible] in Japan.—*G. Lewis*
Curious variety of Argynnis Paphia.—*[illegible]*
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Smerinthus populi and Notodonta dictaea double-brooded.—Id.
Nepticula agrimoniae, Heyden, a species new to Britain.—W. H. B. Fletcher
Re-discovery of Anerastia Farrella.—E. A. Atmore
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Oxytelus fulvipes in Warwickshire.—W. G. Blatch
Influence of size of elytra on flight in beetles.—G. Lewis
Capture of Cassida vittata near Hastings.—F. W. [illegible]
More [illegible] notes.—G. C. Champion
REVIEW: Les Cynipides, 1re partie, traduit par J. Lichtenstein
OBITUARY: Prof. C. G. A. Giebel
Jules Putzeys 215
North Middlesex Natural History Association.—Eds. 215
The Rivista Scientifico-Industriale e Giornale del Naturalista.—Id. 216
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